SO NEAR AND YET SO FAR:
CHOICES AND CONSEQUENCES OF THE STAND-IN AND STAND-OFF APPROACH

BY

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APPROVAL

The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.

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Completing this paper was a little like exploring a cave without a flashlight. In both situations, the burden of the journey does not come from the difficulty of the task, but rather, the uncertainty of what lies ahead. I would not have made it so far into this cave without the guidance of someone who has been through here before. My advisor, Dr. James Kiras, never failed to respond whenever I called out from the darkness in search of help. He declined to provide me a flashlight, however, which would have illuminated my entire path. Instead, he warned me to change direction whenever I was heading for a wall. For that, I am deeply grateful. I would also like to thank Dr. Richard Muller, who helped point me in the right direction early in my journey and encouraged me to keep walking. Dr. Robert Owen was kind enough to discuss a few concepts related to this work and provided me with the first rule of futures planning (and possibly the first rule of cave exploring): "you have no idea what will happen."

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As I write these words, I see some light ahead—possibly a way out of the cave. I'm reminded that I would not have had the courage to proceed through the darkness if it weren't for the love of my wife. She is not always at my physical side on these journeys, but she is always in my heart. She provides me unconditional support and encouragement. I am in debt to her more than she realizes. Yet, maybe I should ask for her understanding because there appears to be another cave ahead. It looks interesting so I may check it out—if only I could find my flashlight.

ABSTRACT

The changing threat landscape has generated a debate within the United States Air Force (USAF) on the approach to basing the USAF should adopt. One aspect of this debate centers on whether the USAF should develop its force to conduct operations from bases in contested areas or if it should increase its capabilities to project power from bases outside contested areas. I refer to these two approaches as stand-in and stand-off, respectively. Given the inherent uncertainty of the future, this study asks: What factors should the USAF consider to determine the emphasis between investments in stand-in versus stand-off capabilities? How does a force-planning strategist know which approach will provide the greatest benefit or even if either approach is possible given growing adversary capability?

This paper argues that force-planning strategists must first determine airpower's anticipated contribution to their security strategy. Specifically, two features of their strategy will influence which basing approach force planners should emphasize: the degree that the strategy relies on the physical presence of airpower in contested areas to gain political benefit; and, the relative dynamic or static nature of the target environment that strategists aim to affect with airpower.

Technologically determined answers to the question of which approach the USAF should emphasize are not valid. It is more beneficial to recognize force planning as part of the competition between states and ask whether the stand-in or stand-off approach provides an advantage with respect to airpower's contribution to the overall strategy. Then, the US should enter the force-planning competition to pursue the desired approach.

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Introduction

Force planning is sometimes portrayed as an activity that prepares a military for potential war.[1] In this view, competition between states is a potentially violent event that could occur sometime in the future. This view, however, is narrow. Explicitly acknowledging that force planning is an essential part of the competition itself is more beneficial. Force planning is not divorced from the potential for violent conflict in war. Building appropriate military capabilities can demonstrate the will and ability to win a violent conflict, which in turn can translate to an advantage in an on-going non-violent competition between states. For force planners, state competition is not an event that may occur in the future, it is something in which they are continuously engaged.[2]

One aspect of the force planning competition is the approach to basing the United States Air Force (USAF) chooses. The USAF must decide how it plans to base its forces to gain advantage today while demonstrating the will and ability to conduct operations in the future. The USAF's assumptions and conclusions on the approach to basing have implications for the rest of force planning, from the systems it purchases to the operational concepts it employs. In this introductory chapter, I provide an overview of this topic, frame the research question, and provide my approach to answering it. To understand considerations for basing, this overview starts by identifying those tasks national leadership expects from the military as outlined in government strategies and planning guidance.

Two national priorities relevant for this study have remained consistent over the last 70 years. First, the US will continue to seek its security by remaining engaged in the

1. Joint Publication 1-02 defines *force planning* as: "planning associated with the creation and maintenance of military capabilities by the Military Departments, Services, and US Special Operations." I use it in this paper to designate the creation of doctrine, operational concepts, future weapon systems, support equipment, military support capabilities, training programs, facilities, and bases.

2. This paper focuses on the military competition between states as they seek security. This focus should not be construed to support the notion that military competition is the primary means, or even a relevant means, for many state interactions. Inter-state cooperation through shared interests, values, and ultimately trust is a more desirable approach to achieving security. Unfortunately, such trust is not shared across the international community leaving military force a substantial role in managing some relationships. The degree the pursuit of military capabilities by all sides inhibits the trust required to establish a lasting peace is an important topic all strategists must consider, but is outside the scope of this paper.

world, underwriting global security through its commitments to allies and partners.[3] To accomplish this task, the US will strive to remain the security partner of choice around the globe by building relationships with allies and critical partners to contribute to stability and growth in critical regions.[4] Planning documents state the US will continue to place a premium on a presence in—and support of—partner nations.[5] The 2012 Defense Strategic Guidance stated, "US forces will conduct a sustainable pace of presence operations abroad, including rotational deployments and bilateral and multilateral training exercises."[6] The authors of the Guidance cautioned that reduced resources will require creative solutions on how the US maintains that presence and support.[7]

The second consistent US priority is to assure access to and use of the global commons.[8] The US has defined the global commons as areas of air, sea, and space that belong to no one state; and has stated these areas are critical to its prosperity and security.[9] It believes that US prosperity rests on its ability to gain access, through these commons, to the global marketplace. In addition, US military leaders have determined US forces need to cross through the global commons to project military force into hostile territory if required.[10] Subsequently, US planning documents declare the military will continue to make the necessary investments to ensure it maintains access to these areas and the ability to operate freely.[11]

The US ability to achieve these priorities, however, is threatened. Potential adversaries have increased their ability to deny US support to allies and block access or freedom of movement in certain areas. These threats are often referred to as anti-access and area-denial (A2/AD) capabilities. Joint Doctrine defines anti-access as, "those actions and capabilities, usually long-range, designed to prevent an opposing force from entering

3. Barak H. Obama, *National Security Strategy* (Washington, DC: The White House, May 2010), 1.
4. US Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington, DC: Office of the Secretary of Defense, January 2012), 2-3.
5. US Department of Defense, *Sustaining U.S. Global Leadership*, 2.
6. US Department of Defense, *Sustaining U.S. Global Leadership*, 5-6.
7. US Department of Defense, *Sustaining U.S. Global Leadership*, 5-6.
8. US Department of Defense, *Sustaining U.S. Global Leadership*, 3.
9. Obama, *National Security Strategy*, 49.; US Department of Defense, *Joint Operational Access Concept: Version 1*.0 (Washington, DC: Joint Chiefs of Staff, January 2012), 1.
10. US Department of Defense, *Joint Operational Access Concept*, 5.
11. US Department of Defense, *Sustaining U.S. Global Leadership*, 2.

an operational area."[12] Area-denial threats, in contrast, are, "those actions and capabilities, usually of shorter range, designed not to keep an opposing force out, but to limit its freedom of action within the operational area."[13]

Potential adversaries are increasing their capabilities and proliferating them to many nations in key areas of US national security interest, such as the Persian Gulf and the South China Sea.[14] Such proliferation of capability has led the US to identify the need to counter A2/AD threats by further developing the ability to project power in areas where access and freedom to operate are challenged.[15] Examples of A2/AD threats include increasingly capable surface-to-air missiles and integrated air defense systems, precision-guided ballistic missiles, long-range cruise missiles, and weapons of mass destruction.[16] In addition, several countries have developed cyber and space weapons that can degrade the US ability to project military power.[17]

The Joint Operational Access Concept (JOAC) summarizes the impact these threats will have on US forces in the future: "The essential access challenge for future joint forces is to be able to project military force into an operational area and sustain it in the face of armed opposition by increasingly capable enemies when US overseas defense posture is changing and space and cyberspace are becoming increasingly important and contested domains."[18] The Concept goes on to call this problem, "one of the most difficult that joint forces will face in the coming decades."[19]

The changing threat landscape has generated a debate within the USAF and across the defense community on the approach to basing the USAF should adopt. One aspect of this debate centers on whether the USAF should develop its force to conduct operations from bases in contested areas, which are within range of adversaries' A2/AD capabilities,

12. US Department of Defense, *Joint Operational Access Concept*, 6.
13. US Department of Defense, *Joint Operational Access Concept*, 6.
14. General Martin E. Dempsey, *Joint Concept for Entry Operations* (Washington DC: Joint Chiefs of Staff, 7 April 2014), pvi.
15. US Department of Defense, *Sustaining U.S. Global Leadership*, 4-5.
16. Dempsey, *Joint Concept for Entry Operations*, 25
17. General Martin E. Dempsey, *Capstone Concept for Joint Operations: Joint Force 2020* (Washington DC: Joint Chiefs of Staff, 10 September 2012), 2.
18. US Department of Defense, *Joint Operational Access Concept*, pii.
19. US Department of Defense, *Joint Operational Access Concept*, 2.

or increase its capabilities to project power from bases outside contested areas.[20] I refer to these two approaches as developing stand-in versus stand-off capability, respectively.[21] The JOAC entered this debate by stating that geography may determine the access challenge more than any other factor because the effectiveness of military power degrades over distance. While advances in long-range weapons, especially airpower, have reduced the degrading effects of distance, these degrading effects still exist.[22] Of course, one way to mitigate this problem is to reduce operational distances by establishing forward bases in anticipated operational areas.[23] However, relying on forward bases is an uncertain approach given the increase in A2/AD threats previously described. The forward bases become a resource the Joint Force must protect and sustain in the face of increased threats, presenting a critical vulnerability for adversaries to attack.[24]

The debate between stand-in and stand-off capabilities was further advanced by the Air Force strategy, *America's Air Force: A Call to the Future*. This strategy provided a general path of where the USAF "needs to go" over the next 30 years.[25] The authors state the ability to operate in contested environments will require a blended solution between stand-in and stand-off capabilities. However, they put emphasis on the stand-off approach suggesting the USAF must increase emphasis on stand-off capabilities while only maintaining stand-in resilience. In addition, the authors stated, "the work to strengthen [stand-in] resiliency in light of increased risk to basing cannot be at the expense of efforts to enhance our stand-off capabilities."[26] Following this guidance in an environment with increasing A2/AD threats will likely result in the USAF relying heavily on stand-off capabilities.

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20. *Bases* here implies the facilities where forces live, train, operate and preposition materiel. They may be large, established and permanent; or small, austere, and temporary. Robert E. Harkavy, "Thinking about Basing." In *Reposturing the Force* (Newport, RI: Naval War College, February, 2006), 10.
21. The terms "stand-in" and "stand-off" are not widely used, however, I adopt them here due to their use in: US Department of the Air Force, *America's Air Force: A Call to the Future* (Washington, DC: Office of the Secretary of the Air Force, July 2014).
22. US Department of Defense, *Joint Operational Access Concept*, 7.
23. US Department of Defense, *Joint Operational Access Concept*, 7.
24. US Department of Defense, *Joint Operational Access Concept*, 7.
25. US Department of the Air Force, *A Call to the Future*, 5.
26. US Department of the Air Force, *A Call to the Future*, 16.

I briefly highlight two additional reports conducted by non-governmental organizations that arrived at different conclusions on the approach the USAF should take towards basing. These reports provide examples of the variety of views on developing stand-in versus stand-off capability. In a report called *Sustainable Pre-eminence: Reforming the U.S. Military at a Time of Strategic Change* by the Center for a New American Security, the authors highlighted the benefits of developing long-range capability, and recommended the Air Force proceed down that path more aggressively.[27] However, upon turning their attention to force posture, the authors expounded on the benefits of having forward-basing within contested areas and recommended the USAF should strengthen its agreements and access to these bases.[28] Taking a different approach, Robert Martinage, writing for the Center for Strategic and Budgetary Analysis, argues the need to reduce dependence on close-in theater land and sea bases in a report titled *Toward a New Offset Strategy*.[29] These examples highlight there is an on-going debate on the future force posture that will drive USAF investment decisions. A strategy that reduced dependence on stand-in capabilities will need increased development of sufficient long-range capabilities. In contrast, a strategy that relies more on stand-in capability will need to develop a force that can survive when faced with the greater threats in the contested areas.

It is uncertain which approach will lead to the most survivable and effective future force. The stand-in approach will fail if the US is unable to develop forces that maintain combat effectiveness while faced with A2/AD threats. The stand-off approach may not succeed if the US is unable to develop forces that can effectively out-range those of an adversary—essentially eliminating the existence of stand-off areas. The stand-off approach is also in jeopardy if the US is unable to produce an operationally relevant number of stand-off capabilities. The varying opinions on the subject, given their implications for force planning, provokes the following questions: What factors should

27. Lieutenant General David W. Barno, Nora Bensahel, Matthew Irvine, and Travis Sharp, *Sustainable Pre-eminence: Reforming the U.S. Military at a Time of Strategic Change* (Washington, DC: Center for a New American Security, 2012) 47.
28. Barno et al., *Sustainable Pre-eminence*, 47.
29. Robert Martinage, *Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014), 17.

the USAF consider to determine the emphasis between investments in stand-in versus stand-off capabilities? How does a force-planning strategist know which approach will provide the greatest benefit or even if either approach is possible given growing adversary capability?

While answering these questions, it is necessary to keep in mind that an adversary will meet every action with a response. Strategists must ground their force-planning decisions, like war itself, on the premise that they are participating in a competition between thinking, adaptive adversaries. Although the venerable Prussian military theorist Carl von Clausewitz purposefully excluded the development, testing, and fielding of weapons and equipment from his theory of war, he rightfully acknowledged that these activities are part of a "wider sense of the art of war."[30] Force planning includes the uncertainty, fog, and friction Clausewitz described, although they have a different character than those grounded in danger during the conduct of war.[31]

I answer these questions by acknowledging they are not new. Humans have experimented with the benefits and limitations of either fighting close or developing greater stand-off capability since they first used weapons in conflict.[32] More recently, balancing airbase vulnerability with the diminishing effectiveness of airpower at longer range has persisted since the dawn of airpower. With a historical perspective in mind, I proceed in Chapter 1 to address the advantages and disadvantages of the stand-in and stand-off approach as described in extant studies and reports. I conclude the chapter with an explanation of my argument. Chapters 2 through 5 each address a specific historical case study. I approach each case study with two intentions. The first is to validate the advantages and disadvantages identified in the literature review. I ask if these cases contain evidence to support the assertions made by previous authors or if any previously unidentified considerations exit. Second, I aim to identify the factors that influenced commander's decision to pursue a stand-in or stand-off approach. In doing so, I uncover

30. Carl von Clausewitz, *On War*, ed. And trans. Michael However and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 127.
31. Clausewitz, *On War*, 127.
32. Archeological evidence suggests a wide range of projectile weapons were developed between 25,000 to 35,000 years ago. Shea, John J., "Middle Paleolithic Spear Point Technology," in *Projectile Technology* ed. Heidi Knecht (New York, Plenum Press, 1997), 79.

those factors that could indicate whether current force-planning strategists should place emphasis on developing stand-in or stand-off capabilities.

The first historical case in Chapter 2 looks at Operation Frantic during World War II (WWII). I chose this case to examine a situation where commanders decided to base air assets in a more contested area—to provide a stand-in capability—based not on immediate operational considerations but rather the desire to assure allies and achieve political gains not directly related to the operation. The case study also includes examples of commanders choosing not to place bases forward at some locations and times. The existence of both decisions within the same context provides a basis to evaluate the competing factors commanders considered to arrive at their conclusions.

The second historical case in Chapter 3 assesses the Battle of Britain during WWII. This case provides an example of commanders choosing to place their forces closer to the adversary to increase operational effectiveness. It does more than simply highlight that basing air assets closer to the operational area increases their effectiveness. This case demonstrates that an attacking force with the initiative, and a defending force that responds to initiative, have differing values of time that will influence the choice commanders make on whether placing forces forward is necessary or desirable. This case study also provides examples of commanders arriving at different conclusions based on the factors they considered important.

Chapters 4 and 5 both address the US response to growing Soviet capability during the 1950s. Chapter 4 describes the US Air Forces in Europe (USAFE) plans to increase survivability through dispersal of its forces, while Chapter 5 covers Strategic Air Command's (SAC) development of long-range capabilities. These two Commands faced similar threats yet chose to pursue opposite approaches to basing their capabilities. The divergent approaches provide an additional example to determine factors that contributed to commanders' decisions.

In the conclusion, I summarize the findings from the case studies to explain how they answer the questions highlighted in this chapter. In addition, I provide a discussion of the implications of this research to how strategists should frame decisions when making force planning decisions. The recommendations include how strategists may choose to blend the approaches given the findings of this study.

Chapter 1

Literature Review and Argument Overview

This chapter serves three purposes. The first is to explain with greater precision the meaning of the terms "stand-in" and "stand-off." The second purpose is to compile the primary advantages and disadvantages of the stand-in and stand-off approach that writers have previously identified. This compilation is later validated by evidence collected in the four case studies. Last, this chapter will conclude with an explanation of the argument that answers how force planning strategists should determine whether to emphasize developing stand-in or stand-off capabilities.

Stand-in and Stand-off

The terms "stand-in" and "stand-off" are not widely used, although the concepts they capture are commonly addressed in reports on force planning. I use these terms for consistency with the US Air Force's (USAF) terminology from its strategy document, *America's Air Force: A Call to the Future*. As explained in the introduction, the authors of the USAF document use concepts of stand-in resilience and stand-off capabilities to describe the capabilities required to operate effectively from within or beyond contested environments, respectively.[1] Critical to these concepts is the definition of a base.

All reusable air assets are required to land eventually to replenish expendable resources. These resources include fuel, ammunition, maintenance services, or rest and recovery for the crew. A base is any location where an aircraft lands to receive these resources. Whether a base is temporary, permanent, has robust services, or only provides minimal support does not influence whether the location is considered a base in the eyes of the USAF.

The location of the base, however, defines whether it is stand-in or stand-off. Bases within the range of adversary threats, and therefore within contested environments, are stand-in bases. Bases beyond the range of adversary threats are stand-off bases. Real-

1. US Department of the Air Force, *A Call to the Future*, 16.

world bases rarely, if ever, cleanly fit into these categories. Determining whether a base is in a contested environment requires the level of threat that constitutes "contested." One may ask where the boundary lies between these two categories. Fortunately, such a strict boundary is not necessary for this study. Determining whether a particular base is definitively stand-in or stand-off is not as important as determining whether air force leaders and force planners are *pursuing* a stand-in or stand-off approach.

Pursuing a stand-in or stand-off approach is defined in relation to the status quo. If commanders choose to move bases from areas of relative safety to areas that are under increased threat, they are pursuing the stand-in approach. If the threat posed by an adversary increases at a particular base and commanders decide to remain while increasing survivability measures, they are pursuing a stand-in approach. Conversely, if commanders choose to move further away from the adversary, trading proximity for greater security, they are pursuing a stand-off approach. They pursue the stand-off approach even if they never attain a fully stand-off base, one that has reached complete sanctuary due to range. The primary aim of this study is establishing why commanders chose to pursue one approach over the other and what those reasons suggest for force planning today.

Advantages and Disadvantages

In an effort to understand the current debate on the stand-in versus stand-off approach, I completed a review of reports and studies on the topic. While not exhaustive, this review captures the most common factors identified as advantages and disadvantages of each approach.

The Stand-In Approach

A review of basing strategy literature reveals two categories of advantages and disadvantages for the stand-in approach, which are summarized in

Table **1**. The first category includes the effects of operating physically closer to the operational area. The second category includes the effects from measures one must take in order to operate in a forward location. Advantages in the first category include:

reduced time to reach operational areas allowing rapid response and increased sortie generation rate; persistent operations with increased loiter time; fewer resources needed per mission such as fuel and maintenance; increased operational reach; and, additional logistics support locations to assist other segments of the Joint Force.[2] Disadvantages of the stand-in approach include: reduced survivability of the base; increased difficulty of sustaining forward locations; and, the difficulty of establishing forward areas during combat, if the air force does not already operate from them prior to the start of hostilities.[3]

The second category—the effects from common measures taken in order to operate from a stand-in base—can further divide into two types. First, operating in a forward, stand-in location often requires operating on foreign soil. This condition is true whenever the location of the potential conflict is outside the US, decreasing the distance to the operational area will likely result in forces based in foreign countries. Operating in a foreign country, of course, is not necessarily the same as pursuing a stand-in approach. The foreign country may sit well outside adversary threat ranges. However, it is appropriate to link these ideas because of how often in practical situations they are connected, and the fact that the extant literature often evokes host nation considerations when addressing the need to pursue either approach. Therefore, for the purpose of categorizing advantages and disadvantages, operating from a foreign country is listed under the category of the stand-in approach.

Operating on foreign soil can have advantages by demonstrating commitment and enhancing credibility to allies, adversaries, and a home population; increasing influence with the host nation; helping prevent regional hostilities before they begin; and, enabling

2. James R Blaker, United States Overseas Basing: An Anatomy of the Dilemma (New York: Praeger 1990), 73-74; US Department of Defense, *Quadrennial Defense Review 2014* (Washington, DC: Office of the Secretary of Defense, 2014), 38; William E. Pinter, "Concentrating on Dispersed Operations: Answering the Emerging Anti-Access Challenge in the Pacific Rim" (master's thesis, School of Advanced Air and Space Studies, 2003), 1-2; Robert Owen, "Sea-Land Basing of Air Refueling Forces: A Concept for Resiliency and Efficiency," in Air and Space Power Journal, (March/April 2015), 12. Barno et al., *Sustainable Pre-eminence*, 47.

3. Jan Van Tol, Mark Gunzinger, Andrew Krepinevich, and Jim Thomas. *AirSea Battle: A Point-of-Departure Operational Concept* (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 3. Martinage, *Toward a New Offset Strategy*, 18-19, iv.

multinational leadership and coalition building through developing partner capability.[4] Nonetheless, operating in foreign countries contains several disadvantages: the host nation may restrict how bases are used; it can generate anti-American sentiment from their mere presence, from their operations, or from friction between US service members and the local population; bases may encourage host nations to reduce their defense efforts; and, it may engulf the US in issues that are peripheral to its interests.[5]

The second type of effects come from the measures an air force may take to increase survivability in the forward location. To increase survivability in a high-threat environment, it is often necessary to operate from a larger number of dispersed bases. Dispersing ensures portions of the force remain operational even if some bases are damaged or destroyed.[6] Advantages of this approach can include presenting a difficult targeting problem for the adversary, enabling some forces to take the initiative while others are under attack, and allowing the bases to support each other.[7] There are other advantages as well. The network of bases produces more axes of attack, placing the adversary in a more difficult defensive position.[8] In addition, their presence and number can decrease the threat posed to other Joint Forces as the adversary needs to account for the presence of the dispersed bases.[9] The primary disadvantages are: increased logistical needs and support personnel to sustain many dispersed bases; and, increased difficulty in command and control of actions at multiple geographically separated bases compared to fewer bases.

The Stand-Off Approach

4. Jacquelyn Davis, *Forward Presence and U.S. Security Policy: Implications for Force Posture Service Roles and Joint Planning* (Washington, DC: Institute for Foreign Policy Analysis, 1995), viii, 69; Michele Flounouy and Janine Davidson, "Obama's New Global Posture," *Foreign Affairs* (July/August 2012).
5. Robert O Work, "On Sea Basing," Lord, Carnes ed. *Reposturing the Force: U.S. Overseas Presence in the Twenty-First Century* (Newport, RI: Naval War College Newport Papers, 2006), 96-97. Blaker, *United States Overseas Basing*, 1.
6. Similar to the link between stand-in and foreign bases, pursuing a stand-in approach does not necessarily require operating from a greater quantity of dispersed bases. The historical evidence that the two concepts are often related. In addition, the extant literature makes this generalization as well.
7. Blaker, *United States Overseas Basing*, 71, 73-74; Pinter, *Concentrating on Dispersion*, 120.
8. Pinter, *Concentrating on Dispersion*, 120.
9. Pinter, *Concentrating on Dispersion*, 120.

The advantages and disadvantages of the stand-off approach are largely the opposite of stand-in effects. For example, stand-in has more logistics requirements that are vulnerable while stand-off has fewer, less vulnerable requirements.[10] In addition, the stand-off approach may provide options for operating from the US, thus freeing the USAF from host nation restrictions.[11] However, demonstrating a credible commitment to allies becomes more difficult with this approach.[12] Last, the stand-off approach may require more time and resources per sortie and offer reduced penetration into the operational area.[13]

An Air Force that develops air assets that travel faster, further, and use fewer resources will mitigate the disadvantages in the areas listed above. The literature advocating a stand-off approach calls for the development of assets with increased capabilities.[14] However, any given air asset—for example, the future Long Range Strike Bomber (LRS-B)—will still require less time and have greater operational reach if positioned closer. Deciding whether the decreased time or increased reach that forward bases provide is desirable requires deciding whether the difference is operationally or strategically relevant—a feature I cover in the conclusion of this chapter.

The stand-off approach also has unique effects that are worthy of consideration. First, the primary advantage of the stand-off approach—one with increased stand-off capabilities—is it holds a larger area at risk at any time.[15] Greater range provides superior flexibility from one operational area to another, which is advantageous when the location

10. US Department of the Air Force, *A Call to the Future*, 16.
11. Harkavy, "Thinking about Basing," 19; Shlapak, David A. Shlapak, John Stillion, Olga Oliker, and Tanya Charlick-Paley, *A Global Access Strategy for the U.S. Air Force* (Santa Monica, CA: RAND Project Air Force, 2002), 96.
12. Air-Sea Battle Office, "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges," (Washington, DC: Department of Defense, May 2013), 3.
13. Shlapak, et al., *A Global Access Strategy for the U.S. Air Force*, 96.
14. Martinage, *Toward a New Offset Strategy* is one example.
15. John A Shaud, *Air Force Strategy Study 2020-2030* (Maxwell AFB, AL: Air Force Research Institute, 2011), 26.
Holding targets "at risk" and its implications for interstate politics and conflict was studied thoroughly during the Cold War. In *Arms and Influence* Thomas Schelling described it as the "power to hurt." Writers, including Schelling, related this power to holding civilian populations in harms way as a means to manipulate risk between states. As used here, however, it does not apply to any specific type of target. Thomas, C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), xiii.

that may require the use of force is uncertain.[16] In addition, the adversary may have to defend multiple areas for any one stand-off asset, making the defense of multiple areas more costly for the adversary. However, cost is a disadvantage as well. Any individual stand-off weapon is likely more expensive than a short-range weapon. The cost difference could limit the quantity procured and, therefore, limit the scenarios where force projection from this asset is useful.[17]

Table 1: Advantages and Disadvantages of Stand-in and Stand-off Approach

		Advantages	Disadvantages
Stand-In	Operating physically closer	• Reduces time to reach operational area Increases sortie generation • Enables persistent operations/Increases loiter time • Requires fewer resources per mission • Increases penetration depth • Provides additional logistical locations to support other segments of the Joint Force	• Reduces survivability of the base • Increases difficulty of sustaining forward locations • Difficulty in acquiring forward locations during hostilities
	Operating from foreign host country	• Demonstrates commitment • Enhances credibility • Increases influence with host nation and region • Enables coalition building through partner development and training • Increases leadership in multinational organizations.	• Subjects operations to host nation restrictions • Generates anti-American sentiment • Causes friction between US service members and local population • Reduces host nation incentive to provide its own security • Engulfs the US in issues that are otherwise peripheral to its interests
	Many dispersed bases	• Creates more difficult targeting problem for enemy • Allows some forces to take the initiative while others are under attack • Provides more axes of attack • Decreases threat to other members of the Joint Force or operational areas	• Increases logistical needs • Requires additional support personnel • Increases difficulty in coordinating actions of multiple bases
Stand-Off	Operating physically Further--with long-range assets	• Increases survivability of the base • Holds larger area at risk--geographic flexibility • Easier to sustain base	• Increases time to reach operational area • Decreases sortie generation • Requires more resources per mission • Decreases loiter time • Decreases penetration depth • Increases cost of individual aircraft—fewer total aircraft

16. Shaud, *Air Force Strategy Study*, 32; "flexible" capture the ability to perform a range of actions in a given time period. Different types of flexibility exist. Stand-off capabilities give superior geographic flexibility since they perform actions across a large range of geographic locations in a given period of time.
17. Christopher Bowie, *The Anti-Access Threat and Theater Air* Bases (Washington, DC: Center for Strategic and Budgetary Assessment, 2002), 15, 63; Blaker, *United States Overseas Basing*, 147-149.

Possible operation from CONUS	• Increases US operational freedom	• Increases challenge of demonstrating commitment to allies
Fewer consolidated bases	• Decreases logistical needs • Requires fewer support personnel • Allows easier Command and Control	• More predictable direction of attack • Loses greater capability if base is unexpectedly attacked

Source: Author's Original Work

Strategy-Driven Approach

Table 1 provides factors to consider when pursuing a stand-in or stand-off approach. The Table is not very helpful, however, at prioritizing one approach over the other. For that task, the force planner must determine the role airpower serves in gaining an advantage over potential adversaries in peace and war. They must determine their view of the value of airpower and its anticipated contribution to their strategy.[18] Specifically, two features of their strategy will influence which approach force planners should emphasize: the degree that the strategy relies on the physical presence of airpower in contested areas to gain political benefit; and, the relative dynamic or static nature of the target environment that strategists aim to affect with airpower.

Political Benefit

As explained earlier in the chapter, I assume basing forces in a foreign country places them in a more contested environment. Therefore, I have linked the concepts of stationing forces overseas with pursuing the stand-in approach. The opposite is not true, however. Pursing a stand-in approach does not necessarily equate to stationing forces in foreign countries. The case studies provide an example of an air force pursing a stand-in approach in domestic territory.

18. Blaker, *United States Overseas Basing,*, 115; Everett Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (New York: Frank Cass Publishers, 2006), 148.
In *The Sources of Military Doctrine*, Barry Posen argues based on confirming the strength of balance of power theory that when an adopted doctrine does not seem to agree with available technology, efforts will be made to change the technology, not change the doctrine. Barry R. Posen, *The Sources of Military Doctrine* (Ithaca, NY: Cornell University Press, 1984), 222.

The political benefit of presence in the contested area can take several different forms, each with different intended audiences.[19] Placing forces in a contested area can become important for domestic political consumption, political effect on the potential adversary, gain benefit with the host country, or affect allied decision makers. The case studies in this paper will provide examples of each of these audiences.

In addition to identifying the intended audience, presence can gain political influence through different mechanisms. I separate the mechanisms into direct and indirect political effect. A direct effect is when the Air Force performs a function that is directly related to the political effect that it desires. For example, if the US aims to increase the credibility of its defensive commitment to an ally by stationing defensive forces in the country then it seeks a direct political effect from its action. If, on the other hand, the US seeks to gain trade concessions from another country and chooses to provide defensive assistance in the country to increase influence in the trade negotiation, then it seeks indirect effect from its action. The two concepts represent the degree that US and host nation interests are aligned in performing the air force mission.[20]

The mechanism and the alignment of interest are important because it will affect which disadvantages from

Table **1** become the greatest concern. Two critical disadvantages identified in the literature review are the possibility the host nation places operational restrictions on the US or that the presence of bases generates anti-American sentiment or friction with the local population. Figure 1 depicts both of these disadvantages. The case studies provide evidence that in order to gain indirect political benefit, the forces placed in the host country must perform a task that the host country finds valuable. Therefore, if the host nation places operational restrictions on the forces, it is of little concern to the nation providing the forces. It should readily defer to the desires of the host country. Direct political effects exist with greater alignment of interest between the host nation and the

19. "Political" is used to mean non-operational reasons for taking (or not taking) an action that depend on the views of constituencies at home or abroad.

20. A discussion on how the relative alignment of interests between the US and the host nation can affect the positive and negative aspects of the basing relationship is addressed in greater detail in: Shlapak, et al. *A Global Access Strategy for the U.S. Air Force*, 38.

nation providing the forces and, therefore, the likelihood of significant operational restrictions is least, although the possibility of restrictions still exists.

The other disadvantage—potential anti-American sentiment—is of greatest concern if seeking indirect political influence. Negative sentiment can degrade the political effects the forces aim to achieve. For direct political effects, the two countries have aligned interests, which will require a greater level of anti-American sentiment to affect operations.

When the US places its air forces in a host country for only operational reasons, not to obtain political influence or benefit with the host country, the disadvantages that threaten to arise from operating there become of greatest concern. The far right side of Figure 1 captures this situation. Unlike the other two options, the host country does not have any incentive to support the operation. If the US does not already operate at the base, gaining access to it may become difficult.[21] The host country may request large concessions for US access. Further, if the US already operates at the base, the possibility the host nation may obstruct operations or charge the US exorbitant fees for maintaining its access is a greater concern. Therefore, operating in a foreign country is least desirable in this situation, since disadvantages become more likely.

	Political Benefit from Presence		
	Direct	Indirect	None
	• Chapter 3: Battle of Britain • Chapter 4: USAFE	• Chapter 2: Frantic	• Chapter 5: SAC
Host Nation Operational Restrictions	Some concern	Low concern—all operations are for host nation value	High concern—may stop operations
Generate anti-American sentiment/Friction with local population	Some concern	High concern—May degrade political benefit	High concern—may inhibit access to bases

Figure 1: Political Benefit from Presence

Source: Author's Original Work

21. Shlapak, et al., *A Global Access Strategy for the U.S. Air Force*, 93.

Figure 1 also includes the chapter and case study that addresses each mechanism for political benefit. In this figure, the case studies are categorized on the primary political effect that leaders sought. A close reading of the case studies will reveal that they each contain secondary interests that blur the distinction between the categories.

Dynamic or Static Target Environment

The second feature that will influence whether force planners should emphasize a stand-in or stand-off approach is the relative dynamic or static nature of the target environment that a strategist seeks to affect with airpower. A dynamic environment, one defined by changes, demands that an air force respond to actions occurring in the environment. For example, an advancing enemy force on the ground, the enemy launching an air attack, or the movement of friendly ground forces that require Close Air Support are all continuously changing, dynamic environments. Another feature of a dynamic environment is the existence of uncertainty. Uncertainty refers to an air force that does not know which targets to strike, or the order it must strike targets, until the conflict unfolds. An air force may know its role is to destroy enemy tank formations to support the ground defense, but it does not know which tanks to attack or in what order until it is revealed by the unfolding of events.

Static environments consist of fixed targets with known locations, even before hostilities begin. Known command and control facilities, government buildings, and bridges fall into this category. An air force can strike at these targets while maintaining the initiative. If an air force had sufficient resources, it would typically prefer to strike all of the fixed targets at once as opposed to spreading the bombing out over time. Operations are not dependent on reaction time as they are in the case of dynamic environments.

A dynamic environment places pressure on minimizing the time between observing the environment and responding to it. The enemy may initiate an air attack that requires an air force to place defensive counterair (DCA) in the correct place at the right time, or friendly troops may call for air support that they require immediately. There are several approaches to minimize response time. The first set of approaches is based on ground-alert, which keeps aircraft on the ground until called upon. The ground-alert

approach will encourage minimizing the time for aircrew to launch aircraft, on developing faster aircraft, and placing bases closer to the operational area. For each of these approaches, the adversary will respond. They may use deception to complicate the decision to launch aircraft and may develop faster means to conduct an action that will mitigate the advantages of faster friendly aircraft. This on-going competition provides an incentive for both sides to minimize the distance they have to travel to the operational area. However, the dynamic nature of the environment will sometimes not allow a ground-alert approach. A quicker response is required.

Airborne-alert is pursued to minimize response time even further.[22] Placing an aircraft in a combat air patrol (CAP) is a type of airborne-alert. Requiring aircraft to maintain persistence in an area for a given duration of time is often not due to needing the presence of the aircraft for the entire time. An air force maintains persistence in an area because the moment it will need aircraft to act is uncertain, and once aircraft are required, they must respond quickly.[23] A DCA or CAS CAP is established to minimize response time to a dynamic and uncertain environment. In effect, the CAP removes the transit time from base to the operational area from the realm of the competition. Flying sufficient CAPs to alleviating the problem of response time is a beneficial position for an air force, similar to the USAF position during recent conflicts. However, the number of aircraft that an air force can keep on patrol decreases as the distance from the base to the operational area increases. The number of aircraft flying CAP at any given time decreases due to increasing sortie duration, therefore, decreasing sortie generation rate. An adversary may take an initiative (an air or ground attack, for example) with quantities of assets that exceed the striking power the CAP can maintain. This possibility once again provides an advantage to the side that can minimize its time spent in transit to the operational area and, therefore, the distance from the base to the operational area. The competition in response time, massing assets, and the uncertainty of when action is required conspire to provide an advantage to whichever side can minimize the transit time.

22. JP 1-02 highlights this point and includes air-borne alert is also conducted to increase survivability.
23. An important exception is a platform that collects continuous ISR. Increasingly, aircraft that were once viewed as only strike aircraft are assisting with ISR collection or the aircraft serves as an information relay. This exception only exacerbates the phenomena I describe on this page where the competition between two sides will place pressure on minimizing the time, and therefore distance, to the operational area.

A static target environment does not have as much pressure on transit time and, therefore, less pressure to place forces closer. The air force is in competition with the adversary, but it is a competition based more on penetration survivability rather than getting to the correct place at the correct time in response to a changing and uncertain environment. With less pressure to base in forward locations, air forces will not accept as much risk to do so. There are still benefits, however, in positioning closer. Even air forces that attack static targets and maintain the initiative prefer to establish bases closer to their targets if they do not have to consider survivability. Positioning closer extends the operational depth and reduces the resources (mainly fuel, but also wear on the aircraft and people) necessary to reach targets. A force planner can develop forces that travel further or use fewer resources. These are measures in which absolute gains are meaningful, unlike responding to an adversary's actions in which relative gains in response time compared to adversary action are more important.

There are two exceptions to the previous statements that make sortie generation rate important, even for striking static targets. The first exception is the adversary may increase the number of their fixed targets (whatever they are) to exceed the number of friendly aircraft (and munitions) available.[24] The second exception is an air force may decide to limit its aircraft procurement with the understanding that each aircraft will need to conduct multiple sorties to strike all targets, which is how the USAF procures aircraft. The nature of the targets may allow for an air force to strike them all at once, but decision makers may deem the cost of purchasing the assets too prohibitive. The desire to increase the sortie generation rate in these situations does not change the fact that static targets place less pressure on the desire to base closer to the operational area. In fact, notwithstanding the sortie generation consideration, static targets can even result in a desire to operate from further away.

Commanders must consider the threat an adversary presents to friendly airbases with respect to the targets the commander intends to attack to decide the best location to establish an airbase. When aircraft or base defensive measures at friendly airbases are

24. There is a decidedly Combat Air Forces (CAF) emphasis to this paper since the crucial issue it deals with is the effect of contested environments on basing. However, the same principles apply to Mobility Air Forces (MAF). When sortie generation rate is important there will be more pressure to decrease the length and time of any individual sortie than if sortie generation rate is less important.

more mobile, with respect to the capabilities that threaten them, than the targets in which they threaten, then it is advantageous for the friendly side to increase sortie durations. An example may serve to clarify this admittedly confusing statement. Airmen at a friendly airbase receive warning that there is an inbound threat. They have some period of time to take defensive actions prior to the attack reaching their base. These actions could include getting their aircraft airborne, or it could include implementing any number of active or passive defenses or positioning them at the correct place. Increasing the distance from the friendly airbase to the adversary can increase the warning time Airmen have to take these measures. It will also increase the time for the Airmen to conduct their sortie, but since they are striking static targets that do not have the ability to take the types of protective actions that the Airmen can, the increased duration does not inhibit their operation as much as it inhibits the adversary's operation. Operating from further away increases friendly and adversary sortie duration. While time is applied to both sides equally, its value to both sides is not equal.[25] The side striking fixed targets will realize an advantage over an adversary.

Implications for Force Planners

Force planners can look at how their strategy calls for the use of airpower to determine what emphasis they should place on pursuing a stand-in or stand-off approach. Pursuing the stand-off approach is advantageous if they view airpower as primarily holding fixed targets at risk, and do not view the presence of airpower in forward contested areas important for political effects. Force planners may then choose to develop long-range assets that can emphasize survivability while penetrating an enemy's air defense to strike a target. They will need to acquire enough of this capability to strike the quantity of targets they anticipate.

Pursuing the stand-in approach is advantageous if force planners view airpower as needing to respond quickly to developing events in the operational area or if placing forces in a contested area will have desirable political effects. Force planners should then choose to develop capabilities that will increase survivability while operating from within

25. Colin Gray, *Fighting Talk: Forty Maxims on War, Peace, and Strategy* (Westport, CT: Praeger Security International, 2007) 72.

contested areas to give future commanders an advantage in their dynamic environments. Figure 2 shows the impact that the political effect of presence and the nature of the target environment has on the desirability of the stand-in or stand-off approach.

		Target Environment	
		Dynamic	Static
Political Effect of Presence	Direct	Most benefit for pursuing a stand-in approach	Benefit of approach depends on strength of political effect in strategy
	Indirect	Most benefit for pursuing a stand-in approach	Benefit of approach depends on strength of political effect in strategy
	None	Operational considerations promote stand-in approach	Most benefit for pursuing a stand-off approach

Figure 2 Determining Stand-in versus Stand-off Approach

Source: Author's Original Work

All force planning is done in the haze of uncertainty; the USAF cannot know if it will succeed. If it places significant resources into stand-in capabilities it may find an adversary's ability to overwhelm its forces with low-cost A2/AD capability still too great. Likewise, if the USAF places resources into stand-off capabilities, it may find the assets so expensive it cannot procure them in operationally significant quantities, or the adversary may develop long-range capabilities that eliminates the potential of sanctuary from range.[26] Therefore, force planners must look to airpower's role in supporting their strategy to determine whether entering a force planning competition for stand-in or stand-off capabilities will provide greater advantage over their potential adversaries.

The following four chapters describe Air Force commanders who made choices about the deployment or development of their forces to either favor the stand-in or stand-off approach. The case studies were mined for reasons the commanders made the choices

26. Or the adversary uses covert operations to attack airbases using Special Forces or other techniques to obviate the promised sanctuary that came from range. Bowie, *The Anti-Access Threat and Theater Air Bases*, 2002.

they did. Throughout the case studies, evidence was collected to validate the advantages and disadvantages of each approach as listed in the literature review and summarized in

Table **1**. Finally, I highlight additional considerations the case studies revealed that were not previously identified.

Chapter 2

Operation Frantic

The promise of achieving political benefits, particularly in coalition operations, has compelled commanders to move forces from relatively secure areas to contested ones. They have made this move even when it required accepting greater operational risk. Force planners who anticipate a strategy that will seek similar political gain can ensure future commanders have the options they desire by pursuing stand-in capabilities.

The first case study addresses Operation Frantic during WWII. US Commanders decided to move forces from relatively secure areas to less secure ones in the hope of gaining indirect political influence with the Soviet Union. I provide evidence for this conclusion by evaluating the period from the initial discussions with Soviet leaders through the first Frantic mission. The subsequent six Frantic missions that followed are not covered in detail as they reveal less about the motivations of commanders to position bases forward in areas of greater risk. I make a few points, however, from these missions to highlight advantages and disadvantages each basing approach provides. The case study concludes with the situation in the spring of 1945 as US commanders debated extending Operation Frantic an additional year. Ultimately, they canceled the operation because the primary political objectives lost urgency given the rapid progress of Allied offensives in Europe and the Pacific.

Operation Frantic

On October 18, 1943 General John Deane circled in a new C-54 Skymaster before descending through the frigid air to land at the Moscow airdrome.[1] He arrived to take command of the newly established Military Mission under the direction of the US Ambassador to the Soviet Union, W. Averell Harriman. The objective of the Military Mission was, "to promote the closest possible coordination of the military efforts of the United States and the U.S.S.R."[2] The timing of his arrival coincided with the start of a

1. John R. Deane, *The Strange Alliance: The Story of Our Efforts at Wartime Co-operations with Russia* (Bloomington, IN: Indiana University Press, 1973), 3-5.
2. Deane, *The Strange Alliance,* 11.

Tripartite Conference of Ministers from the United Kingdom, United States, and Soviet Union. General Dean served as a military observer to the conference prior to starting his new assignment leading the Military Mission.[3] The mere fact the Soviets could host this meeting in Moscow represented their renewed fortunes in the war. Less than two-and-a-half years earlier the Nazi Wehrmacht sprang forward from its staging areas in Poland in June 1941 and eventually reached within 13 miles of Moscow by November 28, 1941.[4] During the ensuing 20 months, the Soviets pushed Hitler's army back through most of the Ukraine in the south and reestablished the frontline some 300 miles west of Moscow. The progress cost over 4.5 million Red Army personnel killed, and over 8 million injured.[5]

There was one refrain coming from Soviet leaders directed at the Western allies during these trying months. General Deane repeatedly heard from his Soviet counterparts during the first day of the Moscow Conference, "What in the hell are the British and Americans doing about establishing a second front?"[6] Prior to the conference, the Soviets made clear a second front against Nazi Germany in the west, by way of a cross-channel operation into occupied Europe, would occupy the first item on the agenda.[7] The Americans and British postponed the date of an invasion of occupied France multiple times. First, the decision by Winston Churchill and Franklin Roosevelt at the Second Washington Conference (20-25 June 1942) to conduct operations in Africa pushed the earliest date for an invasion to the fall of 1943. Then, the Western allies' decision to invade Sicily and Sardinia postponed the cross-channel invasion to 1944. During this decision making process, conducted during the Casablanca Conference (14-24 January 1943), Allied leaders were able to announce with confidence that the new date would not slip, it would occur in the spring of 1944.[8]

The opening of the second front remained almost six months away, at the earliest. General Deane wanted to propose a different American plan to aid the Soviets. He

3. Deane, *The Strange Alliance*, 11.
4. David M. Glantz and Jonathan House, *When Titans Clashed: How the Red Army Stopped Hitler* (Lawrence, KS: University Press of Kansas, 1995), 85.
5. Christian Hartman, *Operation Barbarossa: Nazi Germany's War in the East, 1941-1945* (Oxford, UK: Oxford University Press, 2013), 132. Casualty numbers from Glantz, *When Titans Clashed*, 292.
6. Deane, *The Strange Alliance*, 16.
7. Mark A. Stoler, *Allies and Adversaries: The Joint Chiefs of Staff, the Grand Alliance, and US Strategy in World War II* (Chapel Hill, NC: University of North Carolina Press, 2003), 165.
8. Martin Gilbert, *The Second World War: A Complete History* (New York: Holt Paperbacks, 2004), 392. Deane, *The Strange Alliance*, 16-17.

suggested that the Soviets make bases available in the Soviet Union for American bombers to use on shuttle bombing missions.[9] It was the first suggestion to Soviet Union representatives on what later became known as Operation Frantic.

The idea of shuttle bombing, where bombing aircraft take off from one location and proceed to a different landing base following their bombing run, was not new. Army Air Forces (AAF) leaders had long believed launching attacks from dispersed locations could offer operational advantages.[10] In fact, by the time General Deane suggested Operation Frantic, the Americans had already completed a shuttle bombing mission. In August 1943, the Americans launched a shuttle bombing mission against manufacturing targets in Schweinfurt and Regensburg, taking off from England and landing in North Africa.[11] The approach offers an air force the advantage of reaching targets further from its base than it otherwise could if the recovery base is closer to the target than the departure base. In addition, from the new landing sites, aircraft can conduct additional attacks on previously unreachable targets prior to eventually flying back to the original base.[12]

Notwithstanding these operational benefits, which were always a consideration for US commanders, other primary reasons existed for suggesting Operation Frantic. Evidence from unit histories and communication between senior leaders suggests the US decided to implement Operation Frantic for one primary purpose: to increase influence with the host nation. Its leaders, including General Deane, planned to gain this influence by demonstrating political commitment to the Soviets' efforts on the eastern front and by demonstrating the effectiveness of American strategic bombing. Ultimately, the Americans wanted this influence to pave the way for establishing bases in Siberia from which they could bomb Japan later in the war. The operational benefits to the European theater were treated as secondary objectives in support of the primary political objectives.

To lead operations from the Soviet Union, United States Strategic and Tactical Air Forces' (USSTAF) established a separate headquarters called Eastern Command.

9. Deane, *The Strange Alliance*, 20.
10. Mark J. Conversino, *Fighting with the Soviets: The Failure of Operation Frantic 1944-1945* (Lawrence, KS: University Press of Kansas, 1997) 10-11.
11. Conversino, *Fighting with the Soviets*, 11.
12. Conversino, *Fighting with the Soviets*, 11.

Staff from this Command compiled a history of Operation Frantic during the war that summarized the motivations for the operation. The Command historians documented the reasons behind Operation Frantic in the fall of 1943 from the perspective of the Military Mission at the Embassy in Moscow and their own Command's perspective.

The Military Mission's first priority was setting the conditions for American operations against Japan from the Soviet Union.[13] General Deane agreed with this conclusion stating, "Our major objective was ultimate Soviet-American collaboration in the war against Japan. Bombing bases in western Russia would provide a proving ground for the vast American air operations which we visualized would later take place in Siberia."[14] Beyond the first objective, the Military Mission leaders prioritized improving general Russian-American relations and communications, followed by assisting the Soviets operationally on their front.[15]

From their perspective, Eastern Command leaders listed six objectives in order of priority. Strategic bombing from the Russian front held the top position. It was through this bombing that the US planned to gain influence with the Soviets. Eastern Command listed its next two objectives as shuttle bombing on a cross-continental scale and air support for tactical operations on the Eastern Front.[16] The cross-continental shuttle bombing objective included the operational benefits previously listed. General Henry "Hap" Arnold, Commanding General of AAF, concluded that operating out of the east would force the Luftwaffe to disperse its fighter units throughout Europe to guard against American attacks from three directions. In particular, he believed the Luftwaffe would have to remove fighters from the west to protect the east, thereby reducing the defenses that bombing missions coming from England would have to penetrate. The realignment of German fighters would help to achieve the necessary air superiority for a successful invasion of France.[17] American leaders also believed attacking Germany from all directions would have "psychological importance" on the Germans themselves.[18] In

13. Headquarters, Eastern Command, USSTAF, "The AAF on the Russian Front, Summaries and Conclusions," Drafts and notes, 50.
14. Deane, *The Strange Alliance*, 107.
15. Headquarters, Eastern Command, "The AAF on the Russian Front," 50.
16. Headquarters, Eastern Command, "The AAF on the Russian Front," 48.
17. Conversino, *Fighting with the Soviets*, 11.
18. Headquarters, Eastern Command, "The AAF on the Russian Front," 52.

addition to attacking from multiple directions, US commanders valued the increased operational depth the Soviet bases provided, which made all targets in Nazi-occupied Europe vulnerable.[19] Eastern Command's fourth objective was, "Stimulation of Russian support for American opportunities in the Far East."[20] Further evidence shows this was the primary American objective, even if it was not Eastern Command's primary focus. The fifth objective was to improve Russian-American communications.[21] This objective included improving radio and wire communications for the purpose of obtaining greater intelligence on the size and composition of the German Air Force on the Eastern Front, as well as weather information. Lastly, it aimed for the "development of Russian-American relationships generally."[22]

The priorities listed for these two organizations are consistent with their role in achieving the political benefits of the operation. Eastern Command properly focused on the operational tasks that increased leverage with the Soviets. Subsequently, the Military Mission translated those operational results to the desired political outcome of Soviet cooperation on bombing Japan in the East.

The Americans' primary political purpose for Operations Frantic is further demonstrated by its inclusion in the inter-Allied Tehran Conference (28 November – 1 December 1943). Approximately six weeks after the Ministers' meeting in Moscow, Franklin Roosevelt, Winston Churchill, and Joseph Stalin held a conference in Tehran. This conference was the first of three meetings held between the three heads of government during the war. Prior to the Conference, General Arnold broached the subject of Operation Frantic with President Roosevelt. He stressed its importance in defeating Germany and the experience it would provide for operations from Siberia. Perhaps convinced of Arnold's argument, the President agreed to mention the matter to Stalin.[23]

During the Conference in Tehran, Roosevelt made clear the attention he paid to the war in the Pacific by expounding at length to his fellow leaders on the war against Japan. He even kept the maps of the Pacific on the table while the discussion focused on

19. Conversino, *Fighting with the Soviets*, 11.
20. Headquarters, Eastern Command, "The AAF on the Russian Front," 48.
21. Headquarters, Eastern Command, "The AAF on the Russian Front," 50.
22. Conversino, *Fighting with the Soviets*, 21-22.
23. Conversino, *Fighting with the Soviets*, 28.

Europe.[24] Roosevelt asked Stalin for his personal support of the shuttle-bombing plan that General Deane presented at the Moscow Conference.[25] Immediately after discussing the shuttle-bombing plan, the President presented Stalin with a memoranda stressing "the importance of getting started on secret planning so that one day the US Air Forces could bomb Japan from bases on Soviet territory in the Far East . . ." seemingly linking the two initiatives. Stalin promised to review the matter with Ambassador Harriman upon returning to Moscow. [26]

Initially, the Soviets responded positively. Soviet leaders provided an "approval in principle" to the suggestion.[27] However, the process of moving from diplomatic discussions to establishing operating bases in Russia proceeded in fits and starts. The planners struggled to keep their work aligned with political and military developments during this dynamic time in the war. Planners had to resolve an assortment of major and minor details to include agreeing on base locations, personnel, supply communications, and target selections. Reviewing the process that they followed to approve the number of bases highlights the long process. On 26 October 1943, after the Moscow Conference but before the Tehran Conference, the Joint Chiefs of Staff sent a cable to General Deane in Moscow informing him, "Requirements are estimated at 10 bases – five in the North and five in the South. Plans to move bases forward with the movement of the front are appreciated."[28] Months passed as Ambassador Harriman and General Deane attempted to move the proposal through the Soviet bureaucracy without seeing much tangible success. Finally, on 2 February 1944, Stalin approved the program but limited it to six bases – three in the north and three in the south.

With Stalin's approval, USSTAF planners began a flurry of activity to make the plan a reality.[29] After a series of site visits, the number of potential bases was further reduced due to conditions at various fields. All of the sites were in areas that the Germans

24. Stoler. *Allies and Adversaries*, 167-168.
25. Minutes of Roosevelt-Stalin Meeting, November 29, 1943 in *Department of State Diplomatic Papers Bohlen minutes*, 529.
26. Averell W. Harriman and Elie Abel, *Special Envoy to Churchill and Stalin* (New York: Random House, 1975), 270. Minutes of Roosevelt-Stalin Meeting, November 29, 1943 in *Department of State Diplomatic Papers Bohlen minutes*, 617-618.
27. Deane, *The Strange Alliance*, 20.
28. Headquarters, Eastern Command, USSTAF, "Frantic History: Negotiations and General Planning," 6,12.
29. Headquarters, Eastern Command, "Frantic History," 8.

recently evacuated and destroyed as part of their "scorched earth" retreat.[30] At last, during a meeting between General Deane and Colonel General A.V. Nikitin, deputy commander of the Soviet Air Force, on 16 March 1944, the two nations settled on three fields. They chose the airbases for a combination of their condition and position as far west (closest to the front) as possible. They agreed on bases within the Ukraine near Poltava, Migorod, and Piryatin.[31] These three bases were approximately 50 miles from Kiev and all were destroyed in the German and Soviet fighting to retake them. The condition of the bases only added to the significant work required before operations could commence.[32]

Operating from territory recently re-occupied on the eastern front represented a movement of forces from a relatively secure area to a less secure area. There were two primary operating locations for US strategic bombing during this time. Eighth Air Force (re-organized from VII Bomber Command on 22 February 1944) operated from England. It operated from this location since the summer of 1942 and conducted the first US bombing mission against the German airfields on 2 July.[33] Luftwaffe bombers remained a threat and a force in-being, however, their actual combat effectiveness was unimpressive in the preceding months. The British concluded that trained crews to conduct accurate bombing against defended targets no longer existed. In fact, their greater concern was from German reconnaissance that might obtain intelligence on forces preparing for the cross-channel invasion than from German bombers.[34] The Americans acquired the second basing location more recently in the area of Foggia, Italy. The Allies recaptured this area and moved Fifteenth Air Force from North Africa towards at the end of 1943. These bases in southern Italy never endured a serious attack by the Luftwaffe.[35] In contrast, an American intelligence report issued prior to the first Frantic mission pointed out Eastern Command at the Poltava airfield was only 400 miles from German bases in Belorussia

30. Karel C. Berkhoff, *Harvest of Despair: Life and Death in Ukraine Under Nazi* (Cambridge, MA: Harvard University Press, 2008), 300; Deane, *The Strange Alliance*, 110.
31. Headquarters, Eastern Command, "Frantic History," 17, 54.
32. Deane, *The Strange Alliance*, 114.
33. Martin W. Bowman, *Castles in the Air: The Story of the B-17 Flying Fortress Crews of the US 8th Air Force* (Wellingborough, UK: Patrick Stephens Limited, 1984), 13.
34. Basil Collier, *The Defence of the United Kingdom* (London, UK: Her Majesty's Stationary Office, 1957), 325-326.
35. Conversino, *Fighting with the Soviets*, 86-87.

(largely current-day Belarus). These German bases, the report added, had an estimated 200 long-range German bombers.[36] In addition, the first operational plan for Frantic highlighted that Piryatin is about 270 miles from the nearest German Fighter station.[37] The intelligence reports were not an exaggeration as the Allies were to discover during the second Frantic mission.

The planning of the first Frantic mission reveals the US was mainly interested in making a political statement to the Soviets by showing the effectiveness of strategic bombing. By the beginning of May, General Carl "Tooey" Spaatz, Commander, USSTAF, ordered Fifteenth Air Force, which fell under the command of General Ira Eaker, Commander of Mediterranean Allied Air Forces, to start planning the first Frantic mission. Eighth Air Force was originally scheduled to conduct this mission, but the timing conflicted with its support for Operation Overlord, the cross-channel invasion of France. General Spaatz informed Fifteenth Air Force leaders that he would "obtain from the Russian government its desires as to the targets to be hit en route into Russia."[38] General Spaatz's aim to obtain the Russians' participation in target selection reveals his desire to satisfy their interests. His efforts to satisfy the Russians also led to frustration through the month of May, however, as representatives from both governments tried to come to an agreement.

The Americans' first plan for this mission, which Fifteenth Air Force codenamed "Frantic Joe," identified aircraft manufacturing plants in Riga, Latvia, and Mielec, Poland, as targets to strike en route to the Soviet bases.[39] Because these targets were further than bombers operating from the current allied bases could reach if returning to their departure bases, they aligned with the stated rationale for conducting shuttle bombing. In addition, destroying these targets could slow aircraft production to contribute to the US aim to gain air superiority over Europe. However, the Soviets insisted that the first Frantic mission strike targets further south in the Balkans, including the Ploesti oil fields in Romania. The Russians were much more concerned with destroying targets that could impact fighting on their front. Up to this point in the war, the

36. Conversino, *Fighting with the Soviets*, 93.
37. "Final Frantic Joe Plan, 28 May 1944," in MAAF Frantic History Tab HH.
38. Letter, "General Spaatz to 15AF," in MAAF Frantic History Tab W.
39. Conversino, *Fighting with the Soviets*, 55-56.

Germans did not appear to suffer from any fuel shortages, a condition the Soviets sought to change.[40]

The selection of these initial targets frustrated the American planners because not only could aircraft conducting standard operations from Italy reach these targets, but the Americans claimed they were already doing precisely that. The Americans insisted the first shuttle-bombing mission to the Soviet Union should highlight the new capability shuttle-bombing provides. This disagreement came to a head during a two-hour meeting between General Deane and Soviet General N.V. Slavin, of the Soviet General Staff. General Deane reported to General Spaatz and Eaker that the "discussion became quite heated." General Slavin reminded General Deane of the US General's previous claim that the Americans desired to help the Russian advance in the Balkans. He assured General Deane that the attack against the targets the Soviets suggested would help the Russian advance the most. He added that the Russian General Staff was very sincere in its desire to have these targets the object of the first Frantic Mission.[41]

The evidence confirms General Deane's previous statements of support. Earlier in the month, General Deane wrote in a memo to General Spaatz that he promised this help to the Soviets stating, "I made it plain that our only desire was to help their operations."[42] Eventually, General Deane concluded that the Soviets would not budge and recommended attacking the targets they wanted. In addition, he trusted the Soviets' claim that they would not have such demands on future Frantic missions. General Spaatz agreed and gave the order to attack the targets identified by the Soviets as soon as possible after 1 June.[43]

The American willingness to concede to the Soviets' demands reveals the relative objectives of both nations. From the earliest discussions, the operation was more important to the Americans than the Soviets. First, the Americans introduced the idea, continually pushed for progress on the planning, and ultimately were in a greater hurry to

40. Conversino, *Fighting with the Soviets*, 56.
41. "Messages from General Deane, 31 May, and resultant messages from Generals Eaker and Spaatz concerning Soviet choice of targets," in MAAF Frantic History Tab FF.
42. Cable to Eaker, Spaatz, Arnold, "Message from General Deane re targets, 21 May" in MAAF Frantic History Tab Y.
43. "Messages from General Deane, 31 May, and resultant messages from Generals Eaker and Spaatz concerning Soviet choice of targets," in MAAF Frantic History Tab FF.

start operations than the Soviets. Second, the Americans' willingness to agree to the Soviets' target demands reveals it was more important to them to commence operations from Soviet territory than were the actual targets of attack. Impressing the Soviets with strategic bombing and establishing a precedent for the Pacific theater loomed large on American minds.

Abandoning their original target plans was not critical to the Americans due to their primary political interest in the operation. General Spaatz wrote in the beginning of May that he desired Russian support. As a result, the Russians should choose a strategic target to strike from the Russian bases and select targets for the first shuttle mission. In addition, in a letter outlining the plan for Operation Frantic, General Eaker stated the goals were to "give immediate assistance to the Russians" and wrote the most important objective was to, "establish a practical working basis for extensive future operations in other theatres."[44] Although one of his objectives was to "enhance the effectiveness of bomber offensive by striking at remote eastern industrial targets," an objective not served by the Russian demands, he abandoned this goal when it conflicted with other objectives.[45] For these reasons, the Americans ultimately did not oppose abandoning their plan in favor of the Russians' target area.

The final plan for "Frantic Joe" further revealed that the Americans were interested in its political effect with the Soviets rather than its operational concerns. The plan from Fifteenth Air Force stated, "One of the primary commitments of the Fifteenth Air Force is to give maximum support to the Russian offensive. It is not felt that the Russian Government fully appreciates the potential striking power of a Strategic Air Force. In order to demonstrate to the Russian Government the benefit which has been and can be derived from the employment of the Strategic Air Force in support of the Russian offensive . . . it is believed that we can demonstrate a) the great weight of striking power contained in a Strategic Air Force, b) the efficient results that can be obtained through strategic bombing, and c) the principles and methods of the employment of air power as conceived by the United States Army Air Forces."[46]

44. Letter,"General Eaker, 22 May," MAAF Frantic History Tab Z.
45. Letter,"General Eaker, 22 May," MAAF Frantic History Tab Z.
46. "Minutes from Molotov-Eaker meeting, 5 June, " in MAAF Frantic History Tab HH.

The desire to impress upon the Soviets the strength and efficiency of the US Army Air Forces led the authors of an earlier planning document to almost discount any operational impact of the initial outbound shuttle mission. In a planning document from early May, the planners stated that attacking a heavily defended area on the way to the Soviet Union would leave the force depleted and damaged. The planners worried about leaving the force with "insufficient striking force and the accomplishment in the eyes of the Russian would be unfavorable."[47] Therefore, they felt a "token raid en route would accomplish any mission for publicity purposes."[48] Also, a small bomb load would allow bombers to carry the necessary tools, personnel, and supplies to "insure immediate full-scale operations after landing in Russia."[49] This evidence further reveals the American desire to create a Soviet political response was greater than operational considerations.

Frantic Joe launched on 2 June striking the marshalling yard and locomotive works in Debreezen, Hungary, on the way to the Russian bases.[50] General Deane was proven correct as the Soviets became much more amicable towards American target selection for a period of time after the first mission. As a demonstration of the first mission's political importance to the US, General Eaker accompanied the mission to Russia. After a short reception and meeting at the Poltava airfield, he flew to Moscow to coordinate the targets for future missions. He described the progress in these meetings as "very satisfactory."[51]

The Americans conducted six additional Frantic missions through September 1944.[52] I will not go into detail on each of these missions, however, I will highlight features that are relevant to the advantages and disadvantages of forward bases listed from the literature review. Reviewing this period exposes the disadvantages of operating in a higher threat area in a host nation. These disadvantages include the impacts of relying on the host nation for critical functions such as base defense, the host nation's ability to restrict or block operations, and friction between Americans and the local

47. "First Frantic Plan, 15 May," in MAAF Frantic History Tab X.
48. "First Frantic Plan, 15 May," in MAAF Frantic History Tab X.
49. "First Frantic Plan, 15 May," in MAAF Frantic History Tab X.
50. Cables, Frantic 2 June 1944, Air Force Historical Research Agency, IRIS 216840.
51. "Messages between Generals Eaker and Spaatz re return shuttle, 3-10 June," in MAAF Frantic History Tab II.
52. Conversino, *Fighting with the Soviets*, 149.

population. These factors contributed to a deteriorating relationship between the Americans and the Soviets throughout the summer and the mutual cooling of enthusiasm for the operation.

The Americans relied on the Soviets for the defense of their airfields in the Ukraine. This agreement was the result of both Soviet and American desires to minimize the number of American forces in the Soviet Union. During one of the early base negotiations, the Soviets suggested they provide for the defense. General Deane wrote he acquiesced partially "to get along," a decision he later regretted.[53] Bombers for Frantic II, the first mission from Eighth Air Force in England, landed in the Ukraine on 21 June 1944. On the way to the base, a German single-engine fighter trailed the American formation to the Soviet base.[54] Shortly after the Americans landed, a German long-range reconnaissance plane circled the Poltava airfield taking pictures of the B-17s lined up on the ramp.[55] That evening the Luftwaffe launched a devastating two-hour attack on the Poltava airfield dropping over 100 tons of bombs.[56] The Luftwaffe attack destroyed 43 B-17s, damaged another 26, burned 200,000 gallons of aviation fuel, and killed two American Airmen and over 30 Russian soldiers.[57] The Russian anti-aircraft artillery (AAA) and night fighters utterly failed to interdict the intruders. No German aircraft were brought down despite Soviet AAA firing 28,000 rounds of shells, and only four or five fighters got airborne out of the total of 40 on hand.[58]

There were a number of factors that contributed to the failure at Poltava. Soviet airbase defense doctrine and interception abilities were clearly inadequate. The Americans, for their part, were not blameless either. Not concerned with the threat the Luftwaffe presented, American personnel did not properly disperse or camouflage the aircraft.[59] Despite the significant losses, the Americans were impressed by the bravery shown by Soviet troops and women as they rushed to extinguish fires while the bombs

53. Deane, *The Strange Alliance*, 110.
54. Conversino, *Fighting with the Soviets*, 84.
55. Bowman, *Castles in the Air,* 154. Conversino, *Fighting with the Soviets*, 85.
56. James Lee McDonough, *The Wars of Myron King: A B-17 Pilot Faces WWII and U.S.-Soviet Intrigue* (Knoxville, TN: University of Tennessee Press, 2009) 134.
57. Richard R. Muller, *German Air War in Russia* (Mount Pleasant, SC: Nautical & Aviation Publishing Co., 1992), 213-214; Conversino, *Fighting with the Soviets*, 90; Deane, *The Strange Alliance*, 121-122.
58. Deane, *The Strange Alliance*, 122.
59. McDonough, *The Wars of Myron King*, 155; Conversino, *Fighting with the Soviets*, 92-93

were still falling. In addition, the Soviets refused any help from Americans in concern for their well-being.[60] Regardless of fault and Soviet bravery at the individual level, the Poltava raid caused a noticeable drop in morale and contributed to the growing friction between the Americans and the Soviets.[61]

Throughout this period, relationships on the ground in Ukraine became strained between US service members and the local population, causing Soviet leaders to become increasingly uncomfortable with Americans on Soviet soil.[62] There were multiple causes for this breakdown. Some Ukrainians did not approve of Americans interacting socially with local women. In addition, the Ukrainians did not appreciate the Americans picking through the ruins of towns outside their base to find items to sell back to the locals on the black market.[63] On a limited basis, some of these confrontations even resulted in physical altercations between Soviets and Americans.[64] This concerned Brigadier General George McDonald, the Director of Intelligence for USSTAF. He noted that while similar clashes happened in all countries where foreign troops were stationed, these incidents could adversely affect Operation Frantic since one of the objectives was to improve relations between the US and Soviet Union.[65]

During the last two Frantic missions, there was a significant differing of interests between the Americans and the Soviets on whether to support the Polish Home Army in Warsaw, ultimately restricting American operational freedom. As the Soviets fought their way toward Poland, a resistance movement lead by the Polish Home Army, which was connected to the exiled Polish government in London, revolted against the Germans.[66] The English and Americans sought to use the Ukrainian bases to support this movement, but Stalin had other plans. He recently lent his support to a newly created rival group of the Home Army to ensure Soviet influence continued over Poland after the war.[67] President Roosevelt ordered General George C. Marshall to use the Frantic operations to

60. Conversino, *Fighting with the Soviets*, 88-89.
61. Bowman, *Castles in the* Air, 154; Conversino, *Fighting with the Soviets*, 93.
62. McDonough, *The Wars of Myron King*, 111.
63. Conversino, *Fighting with the Soviets*, 96-97, 105-108.
64. Conversino, *Fighting with the Soviets*, 99.
65. Conversino, *Fighting with the Soviets*, 98.
66. McDonough, *The Wars of Myron King*, 158; Davies, Norman, *Rising '44: The Battle for Warsaw* (New York: Viking, 2004), 236.
67. Davies, *Rising '44*, 625; Conversino, *Fighting with the Soviets*, 130-131.

assist the Home Army. However, when Ambassador Harriman broached this topic with the Soviets they "could not grant landing rights for American aircraft dropping supplies to the Home Army."[68]

Both Roosevelt and Churchill urged Stalin to permit assistance to the Home Army, but Stalin replied by calling the resistors "power-seeking criminals."[69] Soviet Deputy Commissar for foreign Affairs, M. Vyshinsky wrote to Ambassador Harriman that "the Soviet Government cannot of course object to English or American aircraft dropping arms in the region of Warsaw, since this is an American and British affair. But they decidedly object to British or American aircraft, after dropping arms in the region of Warsaw landing on Soviet territory."[70]

Following a 20-days delay, Stalin reversed course and provided landing rights in the Ukraine to planes following a support mission to the Home Army.[71] Because of Stalin's reversal, the Americans were able to drop the Home Army support as part of Frantic VII. The Americans dropped 1,284 containers of food, weapons, and supplies, however 80 percent fell in German controlled areas.[72] A German sentry who watched the massive B-17 formation drop the supplies and later discovered the ammunition the Americans dropped was the type needed by German weapons wrote sarcastically, "Oh, how decent they are. The Americans are bringing the supplies that we left in our haste in the west, and they are delivering it to us in Warsaw, by plane!"[73]

The Americans planned an eighth Frantic mission to provide additional support to the Home Army, but after another 12 day delay waiting for further Soviet approval, the resistance collapsed in the face of ferocious German attacks before the Americans had the chance.[74] The Home Army surrendered to the Germans who held Warsaw until the Red Army captured it in January 1945.[75]

The dispute over supplying the Home Army in Warsaw only worsened the US and Soviet relationship. It resulted in Soviet authorities grounding American aircraft,

68. Conversino, *Fighting with the Soviets*, 136-137.
69. Conversino, *Fighting with the Soviets*, 137.
70. Davies, *Rising '44*, 301.
71. Conversino, *Fighting with the Soviets*, 146.
72. Davies, *Rising '44*, 377; Conversino, *Fighting with the Soviets*, 151.
73. Davies, *Rising '44*, 379.
74. Davies, *Rising '44*, 381.
75. Conversino, *Fighting with the Soviets*, 157-158.

preventing American crews from servicing damaged aircraft forced to land in Poland, and blocking the movement of injured Americans from Poltava to the general hospital in Tehran.[76] It demonstrated the restrictions the US may find itself when it chooses to operate from foreign countries.

After the American planners had canceled the eighth Frantic mission, operations ceased for the winter. By November 1944, American commanders faced a decision on the direction Operation Frantic should take in 1945. Much had changed during the previous year. The most obvious change in the last 12 months was the significant advances the Soviets made on their front, calling into question whether operations originating in the Ukraine were still beneficial. The Eastern Front advanced over 350 miles in the north and over 600 miles in the south since the previous fall.[77] With the quickly advancing front in mind, General Spaatz's USSTAF staff performed an Operational Planning Study in November 1944.

The purpose of the study was to evaluate if USSTAF should move bases for Operation Frantic further west. The study listed two objectives of the original Frantic operation. As previously identified, the primary objective was political benefits from US operations on Soviet territory while the secondary reason was the operational effects on German morale. The study's authors stated moving Operation Frantic from Poltava to Budapest, Hungary, would reduce the distance to Berlin from 900 to 425 miles.[78] The listed operational benefits from reduced distance included increased bomb load, increased frequency of operations and sortie generation rate (due to shorter routes and better weather), and reduced engine maintenance.[79] The authors also highlighted that keeping the bases in the Soviet Union served the primary political objective best while moving the bases further west better assisted the operational benefits. General Spaatz summarized the findings of this study in a memorandum to General Arnold. Ultimately, Spaatz recommended moving Frantic to the Budapest area.[80] The Americans still wanted to achieve political benefits from Operation Frantic. However, to gain benefit it must have

76. Deane, *Strange Alliance*, 123; Quoted in McDonough, *The Wars of Myron King*, 160.
77. Hartmann, *Operation Barbarossa*, 139.
78. USSTAF, Operational Planning Study, 12 Nov 1944.
79. USSTAF, Operational Planning Study, 12 Nov 1944.
80. Cable, Spaatz to Arnold, 15 Nov 1944.

operational benefits for the Soviets. Continuing to operate from the Ukraine simply did not make any more sense in relation to Operation Frantic's objectives.

The political motivations underpinning Operation Frantic began to fray by late 1944. General Deane provided General Arnold and General Spaatz with an assessment that revealed how much had changed in the strategic environment over the last year. He concluded, "From the political point of view, I do not believe it is as important that we should operate with the Russians at this time as it was a year ago."[81] In the Pacific, the Americans had recently completed the campaign in the Marianas Islands, capturing Tinian by August 1944, which provided a base with sufficient proximity to conduct strategic bombing on Japan's home islands. The developments in the Pacific and Europe shifted American interests in regard to working with the Soviets. Furthermore, other fissures in the relationship further strained US-Soviet relations. These fissures resulted, in part, from reports on the Soviet army's conduct in occupied areas and the Soviet decision not to support the Polish Home Army during the abortive uprising. More American officers and civilians began to question the ability to cooperate with the Soviets after the war and how best to prepare for the post-war strategic environment.[82]

The primary objective of moving Frantic to Budapest would have to rest on operational benefits instead of political ones. US commanders assessed these operational benefits were significant enough to consider moving operations closer to Germany. Spaatz expressed to Arnold his concern that the Germans continued to increase their fighter production output. Such concerns compelled him to want to base closer to the operational area, even if that area was at greater risk of attack.[83] This move would primarily assist the American fighter forces. Spaatz wrote, "as the German Air Force increases, the 15th will be more and more handicapped in deep penetrations unless effectiveness of its escort fighters can be increased by advanced bases."[84]

In a memorandum later in the month, Spaatz continued to press the operational benefits of moving bases, even indicating the entire Fifteenth Air Force could move to

81. Cable, Arnold to Spaatz, 18 Nov 1944.
82. Stoler, *Allies and Adversaries*, 210-211.
83. Cable, Spaatz to Arnold, 23 Nov 1944 and Meeting minutes, HQ MAAF, 29 Nov 1944.
84. Cable, Spaatz to Arnold, 23 Nov 1944 and Meeting minutes, HQ MAAF, 29 Nov 1944.

the new bases at a later time.[85] Moreover, he thought the bases could logistically support the land campaign stating, "[they] would facilitate a major move into the area if it became desirable at a later date."[86] A report on the plan to move operations to Budapest highlighted the increased loiter time and operational depth provided by forward bases. The report stated, "fighters staying capacity is based on distance back to base" and "[AAF] need to conduct about two bombing operations a month in northeast Germany. . . which are generally inaccessible." To accomplish this objective, the plan stated the Americans required four bases in the Budapest area.[87]

With broad agreement among American air general officers on the benefits of establishing operations in Budapest, the attention of planners focused on how to man, and importantly, defend the bases. The increase in personnel and equipment needed to support additional forward bases contributed to the American's difficulty establishing them. In a memorandum on 4 December, the USSTAF staff wrote it believed AAA was necessary given the "present and contemplated strengths of German Air Force."[88] Originally, the Americans attempted to provide these defenses themselves based on "experiences gained in 1944 operations," possibly referring to the inadequate Soviet defensive effort to protect American bombers at Poltava during Frantic II.[89]

This plan, however, met with a series of complications. First, available AAA did not exist since American leaders assigned all excess artillery to Army ground units.[90] Unfortunately, USSTAF planners had to look to the Soviets to provide the necessary AAA.[91] Second, obtaining the required 4,000 people needed to support the Bomb and Service Groups at the new bases required breaking apart two existing bomb groups.[92] The US commanders in Europe found the potential impact to their operations unacceptable given the pace of operations they envisioned to continue the war effort past 1945.[93] The

85. Meeting minutes, HQ MAAF, 29 Nov 1944.
86. Cable, Spaatz to Arnold, 28 Nov 1944.
87. "Plan for Resuming Shuttle Operations in Spring 1945" AFHRA 522.161-5 225675
88. USSTAF to Anderson, 4 December AFHRA 522.161-5 225675
89. "Plan for Resuming Shuttle Operations in Spring 1945" AFHRA 522.161-5 225675
90. Col Alfred Maxwell to Major General Anderson, letter, "Possibility of Obtaining Anti-Aircraft Artillery Units from the Ninth Air Force for Use in the Budapest Area," 7 December 1944.
91. Anderson to War, 8 December 1944, AFHRA 522.161-5 225675.
92. USSTAF, "Personnel for Frantic Operations," 9 December 1944. Eaker to Spaatz, 11 December 1944, AFHRA 522.161-5 225675.
93. Eaker to Spaatz, 11 December 1944, AFHRA 522.161-5 225675.

planners subsequently adjusted their estimates by reducing the proposed bases to only two, needing only 2,000 people instead, and looking to the Soviets for ground defense in addition to antiaircraft defense.[94] Although Soviet leaders agreed in principle on the movement of the bases to Hungary, negotiations dragged on for months.

Finally, on 3 April 1945 the US Military Mission in Moscow recommended that due to Soviet General Staff delays, the Americans should conclude Operation Frantic.[95] On 19 April, General Marshall, Chief of Staff of the Army, wrote to General Eisenhower and Spaatz directing them to inform the Soviet authorities that, "because of the advanced stage of the war we consider it inadvisable to take advantage of their agreement to provide United States Air Bases in the Budapest Area." He added that his subordinates were to abstain from tactical air operations in support of the Soviet ground forces.[96] Although the Americans continued to use Poltava to assist their crews forced to land behind Soviet lines, the relationship evaporated and the Soviets no longer desired American presence in their territory.[97]

Conclusion

Operation Frantic provides an example of commanders choosing to place forces in a forward location of greater risk. In other words, commanders choosing to pursue a stand-in approach. The AAF leaders were motivated primarily for political purposes to gain influence with the Soviets and to enable coalition building with their ally. Secondary to the main purpose was the desire to increase operational reach, reduce travel time and wear on aircraft, and complicate the enemy's defensive plans by providing more axes of attack.

AAF leaders originally sought indirect political influence from Frantic. The Americans wanted to perform a service the Soviets found valuable, but the Soviets were never entirely convinced strategic bombing could significantly contribute to success on the Eastern Front. Therefore, the Soviets deemed this operation a low priority, which

94. Caserta to USSTAF, 12 February 1944, AFHRA 522.161-5 225675;
HQ AAFMTO to HQ USSTAF, 6 March 1944, AFHRA 522.161-5 225675.
95. US MILMIS Moscow to USSTAF, 3 April 1945, AFHRA 522.161-5 225675.
96. WAR to Olson, Eisenhower, Spaatz, 19 April 1945, AFHRA 522.161-5 225675.
97. Deane, *The Strange Alliance*, 123-124.

increased the length of time and difficulty surrounding the establishment the bases. As the American planners pursued indirect political influence they did not have great concern that the Soviets would disrupt operations, as is expected and presented in Figure 1. During the planning for "Frantic Joe," the American commanders defaulted to Soviet targeting desires since their primary interest was satisfying the Soviets. Also, as expected when seeking indirect political benefit, American commanders were more sensitive to anti-American sentiment in the local population. As friction developed, senior commanders noted that unlike a mission primarily focused on operational considerations, poor relations with the local population could directly threaten mission accomplishment. The pursuit of only indirect political effects, however, did not persist.

The presence of American forces in the Ukraine provided a means to assist the Polish Home Army during the Warsaw uprising. This development offered the Americans an operational interest and opportunity that did not align with the Soviet's interest. Their purpose was no longer to gain political benefit. Therefore, operational restrictions became a great concern. When Stalin restricted the missions aircraft stationed in Poltava could perform it contributed to the suppression of the Polish Home Army and significantly disturbed American leadership, all the way to the President.

> American commanders continued to pursue a stand-in approach by contemplating moving operations further west in 1945. In their cables, they expressed many of the advantages identified in

Table **1**. The American commanders acknowledged that operating from Hungary reduced distance and time to the operational area, increased sortie rates, increased loiter time, and provided bases to support other portions of the Joint Force. In particular, they were interested in moving fighters to the new bases in Hungary since the fighters would benefit from the reduced range more than the bombers. They also experienced a noteworthy disadvantage—the increased resources, mainly in people, needed to operate the additional bases. Once the political objectives disappeared and progressing events marginalized operational benefits, their desire to move forces further forward evaporated.

The next case study shifts from primarily political considerations to primarily operational considerations, although as is always the case, the two influences are often

inseparable. Within operational considerations, the importance of time can take center stage as the driving force behind pursuing a stand-in or stand-off approach.

Chapter 3

Battle of Britain

I use the second case study to explore the operational and strategic value of time. It is clear that basing closer to the enemy results in requiring less time to reach them (and them to you). The *value* of reduced time, however, is not as clear. The importance of reducing time depends on whether one has the initiative or reacts to the enemy initiative and the strategic approach commanders chose to employ. As the value of time changes, the desirability of basing postures change as well. In this chapter, I examine the Battle of Britain during WWII. The Battle of Britain provides examples and a wealth of evidence on the differences of opinion among British air commanders on the importance of range and time. These differences stemmed from their varied strategic approaches and individual perspectives. While exploring the case study, I also identify factors other than time that influenced basing posture to provide further examples of the factors listed in Table **1**.

Battle of Britain

War appeared profitable to the Nazis in the summer of 1940. The previous year they initiated the European war by invading Poland, annexing half of that country in little over a month.[1] More recently, they completed a swift six-week campaign to defeat France and although they did not destroy British forces, the Wehrmacht and Luftwaffe managed to expel them from the continent without their heavy equipment at Dunkirk.[2] The Nazis controlled most of continental Europe with the remaining areas controlled by aligned or neutral countries. The most significant remaining threat to Nazi domination of Europe was the United Kingdom (UK). Standing largely alone against the Nazis, despite modest American support, even the protection of the English Channel and the Royal Navy was insufficient to ensure the UK's security.

1. Michael J. Lyons, *World War II: A Short History* (Upper Saddle River, NJ: Prentice Hall, 2004), 79-80.
2. Lyons, *World War II*, 96-99.

Notwithstanding the significant threat it faced, the UK was not completely helpless. It did not possess the military strength to re-gain a foothold on the continent, yet it did have war-making industry, billions of dollars of overseas assets it could use to buy arms, sea lines of communications with its colonies, and an increasingly close relationship with the United States.[3] These factors meant that time was not on the Nazi's side over the mid- to long-term. The UK needed to hold out long enough to make these factors relevant. While Hitler hoped the UK would not continue the war, the British refused to come to terms with the Nazis.[4] British resistance compelled Hitler to order an attack on the UK to eliminate it as a threat prior to focusing on his ultimate aims in the east.[5] Hitler turned to his air force, the Luftwaffe, to achieve a necessarily rapid victory.

The leaders of the German High Command knew they could not invade and occupy the UK without first defeating the Royal Air Force (RAF).[6] Therefore, Adolf Hitler turned to the Luftwaffe, under the command of Hermann Goering, to gain air superiority over the UK as a precondition for launching an invasion. He hoped, however, that an invasion would prove unnecessary. He thought that the increased pressure on the UK from the elimination of its air defenses and the destruction of its war-making capacity could bring the UK to the negotiating table.[7] The Nazi's hope was misplaced. Luftwaffe leaders were unaware of the tenacity of the British political leadership under Winston Churchill as well as the strength of UK aerial defense.[8]

The decades preceding WWII were marked by continual change making it difficult for the UK to develop plans for an air-defense system. Aerial technology changed rapidly from biplanes made from wood and canvas to all-metal monoplanes with improved performance in range, speed, altitude, and carrying capacity.[9] The development

3. Adam Tooze, *Wages of Destruction: The Making and Breaking of the Nazi Economy* (London, UK: Penguin, 2008), 400, 403.
4. Stephan Bungay, *The Most Dangerous Enemy: An Illustrated History of the Battle of Britain* (Minneapolis, MN: Zenith Press, 2000) 26.
5. Bungay, *The Most Dangerous Enemy*, 24.
6. Basil Collier, *The Defence of the United Kingdom* (London, UK: Her Majesty's Stationary Office, 1957) 159.
7. Bungay, *The Most Dangerous Enemy*, 27.
8. John Ray, *The Battle of Britain New Perspectives: Behind the Scenes of the Great Air War* (London, UK: Brockhampton Press, 1994) 67; Bungay, *The Most Dangerous Enemy*, p51.
9. B. Franklin Cooling, ed., *Case Studies in the Achievement of Air Superiority* (Washington, DC: Center for Air Force History, 1994) 115.

in the field of electronics, especially radar, drastically changed commanders' situational awareness across their operational area. As the subsequent analysis of the Battle of Britain shows, the capability radar provided to commanders drove changes in RAF organization, doctrine, and tactics.

Changes in technology were matched by changes in the threat the UK faced. For a variety of reasons, UK leaders shifted their perception of the threat from France to Germany, after the rise of Hitler and the Nazi's subsequent aggressive rearmament. This shift required British leaders to alter defenses optimized for the south to ones facing east instead. Then after the fall of France in June 1940, the British needed to adjust their defenses yet again to defend from both the south and the east. In addition, Nazis control of the coastline from Normandy to the Netherlands increased the directions and decreased the distance from which the enemy may attack compared to British pre-war defensive planning.[10]

Despite the rapid changes in the strategic and operating environment, the British developed an impressive system for air defense by the summer of 1940. The Air defense of the UK was the responsibility of Fighter Command led by Air Chief Marshall Sir Hugh Dowding, who assumed command in 1936.[11] The system for defense he pioneered, later referred to as "the Dowding System," consisted of four numbered groups each responsible for a geographic area of Great Britain.[12] These groups were: 10 Group responsible for south-west England, 11 Group covering the south-east, including London, 12 Group responsible for most of England north of London and Wales, and 13 Group defending the northern stretches of England and Scotland.[13] Each group was further divided into multiple sectors that each controlled up to six, but most often no more than two or three, squadrons that were distributed to a handful of bases within the sector.[14] Group Commanders had operational command in their area of responsibility, which meant they decided when to send aircraft to engage incoming Luftwaffe raids. Fighter

10. Cooling, *Case Studies*, 115-117.
11. Bungay, *The Most Dangerous Enemy*, 46-47.
12. Ray, *The Battle of Britain*, 25. Dowding is credited with building the system which already had a designed architecture. Major General E.B. Ashmore may be said to have been the system's architect as he invented the gridded map, counter, and reporting system so critical to the system's functioning. Bungay, *The Most Dangerous Enemy*, 47.
13. Bungay, *The Most Dangerous Enemy*, 46-47.
14. Bungay, *The Most Dangerous Enemy*, 47.

Command headquarters coordinated operational support from one group to another, determined the force posture of aircraft and personnel across all groups, and established the strategic approach for the defense of the island. Sector controls, meanwhile, were responsible for ensuring individual units made contact with the enemy.[15]

The particular strength of the Dowding system was its ability to capture a single view of operations, what we would term today a "Common Operating Picture," that Fighter Command shared across all levels of command. The common operating picture enabled timely and coordinated response to incoming attacks. The Dowding system accomplished coordination by maintaining plotting maps at each level of headquarters—Fighter Command headquarters, Group headquarters, and Sector Controls.[16] A typical sequence of events to update the plotting maps consisted of the British first detecting incoming raids using fifty radar stations, code named "Chain Home," positioned along the coast.[17] Chain Home gathered four pieces of information about enemy aircraft: range, direction, altitude, and size of the raid.[18] Radar operators sent the information from Chain Home to Fighter Command headquarters where filter officers plotted the attacker's details on a map. At the same time, these officers passed the information to the Group Commands via telephone. Group Commands maintained their own maps and subsequently passed the information down the chain of command to sector controllers and observer posts. Observer posts consisted of small numbers of individuals positioned across the island to visually scan the sky for enemy aircraft. The observers sent reports back to their respective sector controller who passed information back up the command chain to converge or diverge with existing reports. Therefore, radar information entered the system at the top of the command chain, observer information entered at the bottom, while all levels continuously shared information to keep a common operating picture.[19]

The exact date the Battle of Britain started cannot be established objectively since the attacks increased gradually, first over the Channel then later over the UK. Most British sources suggest the battle began 10 July 1940. Similarly, different sources break

15. Bungay, *The Most Dangerous Enemy*, 49.
16. Bungay, *The Most Dangerous Enemy*, 49.
17. Peter Townsed, *Duel of Eagles* (New York: Simon and Schuster, 1970), 270.
18. Bungay, *The Most Dangerous Enemy*, 46.
19. Bungay, *The Most Dangerous Enemy*, 47-49.

the battle down into divergent phases convenient for specific purposes. I suggest the Battle of Britain had five phases. The first phase started 10 July and ended 7 August, the dates when the Luftwaffe primarily attacked Channel convoys and ports. During the second phase, from 8 to 23 August, the Luftwaffe shifted its focus to coastal airfields and radar stations. The third phase, from 24 August to 6 September, saw an increase of German attacks on inland airfields and sector stations around London. The fourth phase, starting 7 September and lasting until the end of September, marked a significant change in the battle. This phase is sometimes called "the Blitz," as the Nazis changed their approach by focusing attacks on the city of London. Last, the fifth phase started in October when the number of Luftwaffe attacks dropped significantly and were directed against targets of only secondary importance.[20] For the purposes of this short description, I focus on events largely in the second and third phases. In particular, from 13 August, on what the Germans called *Adler Tag* or "Eagle Day," to 6 September when the battle shifted to the Blitz.[21] Luftwaffe attacks preceded this period, however, they were not concentrated or persistent.[22] During this time, Luftwaffe efforts to break the UK air defense system were their greatest.[23]

Fighter Command used airfields all across Great Britain, from Hawkinge and Manston positioned on the coast of Kent, closest to France, to an airfield at Wick in northern Scotland.[24] Unsurprisingly, the bases in the south of England were in a much higher threat environment than the bases to the north. As a result, the Luftwaffe attacked the southern bases much more often. In fact, any bases north of London were considerably safer from attack. This relative safety was due to the fact the German's Bf 109 fighter protection did not have the range to escort bombers to the northern airfields if they departed from France. The Luftwaffe discovered unescorted bomber attacks were unfeasible, which allowed the RAF to repel several northern raids.[25] Given their vulnerability to attack and proximity to the enemy, the operations of 11 Group's southern

20. Derek Wood, *The Narrow Margin: The Battle of Britain and the Rise of Air Power 1930-40* (Westport, CT: Greenwood Press, 1961), 23.
21. Collier, *the Defence of the United Kingdom*, 165.
22. Collier, *The Defence of the United Kingdom*, 156.
23. Eunice Wilson, *Dangerous Sky: A Resource Guide to the Battle of Britain* (Westport, CT: Greenwood Press, 1995) 11-15.
24. Collier, *The Defence of the United Kingdom*, Map 12.
25. Bungay, *The Most Dangerous Enemy*, 194.

bases, comprise what this study identifies as a stand-in approach. Conversely, operations from 12 Group bases located north of London equated to a stand-off approach. One of the Luftwaffe commanders, Field Marshal Albert Kesselring, agreed with this description, even though he did not use the specific terms. He worried the British would move their operating bases north of London where he could not as effectively attack them.[26]

To put the difference in the quantity of attacks in perspective, I compiled statistics of all attacks on airfields from 12 August to 6 September (Figure 3). Of the 74 attacks on airfields that took place during this period, 65 were conducted on airfields in 11 Group. Not surprisingly, 54 attacks were on airfields in the narrow path between London and German bases on the Pas-De-Calais, France, from which the Luftwaffe primarily operated.[27] Not all of these airfields were important to Fighter Command.[28] While some airfields contained sector control stations and Fighter Command locations, others were mostly unused.[29]

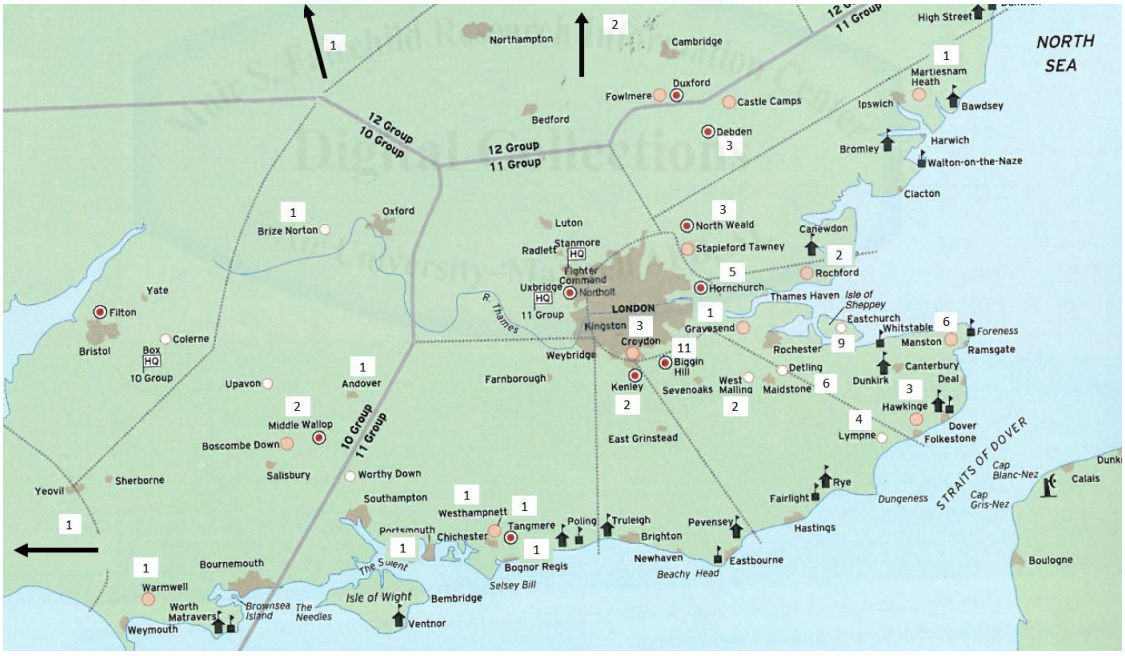

Figure 3: Luftwaffe Airfield Attacks 12 August to 6 September

Source: Bungay, The Most Dangerous Enemy, 106. [30]

26. Bungay, *The Most Dangerous Enemy*, 197.
27. Bungay, *The Most Dangerous Enemy*, 195, 106.
28. Ray, *The Battle of Britain*, 70.
29. Bungay, *The Most Dangerous Enemy*, 194.
30. Map from Bungay, *The Most Dangerous Enemy*, 106. Zenith Press provided permission for the use of the image in this paper via email on 17 April 2015. For a copy of the email please contact Air University,

RAF commanders understood basing more of their aircraft in the north offered greater protection. Nevertheless, three other considerations drove their decision to operate aircraft from bases south of London throughout the battle. These considerations were: first, the need to reduce the time to engagement given the adopted air defense strategy; second, a desire from within the RAF and from political leaders to not abandon any portion of the island; and third, the prerequisite for operating the Dowding System as efficiently as possible, given the limited resources at the British disposal. Even though these factors resulted in British commanders choosing to operate within the higher threat environment, they did not always trump survivability concerns. During the course of the battle, British Commanders, as the subsequent discussion shows, determined the risks of operating from the bases on the coast did not outweigh the benefits. Therefore, the UK ceased operations from these bases. The perspective of key RAF leaders helps frame how they assessed operational risk.

Other than Air Chief Marshal Dowding, three other British officers were heavily involved in basing decisions. The first is Air Chief Marshal Sir Keith Rodney Park. Park took command of 11 Group in April 1940 after having served as Dowding's Chief of Staff the previous two years.[31] 11 Group conducted the vast majority of combat operations since its geographic responsibility was the southeast portion of the island—directly across the Channel from Nazi controlled France—and it also contained London.[32] Next, Air Chief Marshal Sir Trafford Leigh-Mallory commanded 12 Group.[33] Unlike Park, who recently took command of his group, Leigh-Mallory built 12 Group from scratch having been its commander since 1937.[34] Also, unlike Park, who had a close relationship with Dowding, Leigh-Mallory had a much more strained relationship with his superior. As an example of the difficulty in their relationship, Park recalled once while he still worked as Dowding's chief of staff that Leigh-Mallory departed a meeting with Dowding stating, "he would move heaven and earth to get Dowding sacked from his

School for Advanced Air and Space Studies, Maxwell AFB. Author modified the graphic to locate and place the quantity of attacks on each airbase using attack information provided in Bungay, *The Most Dangerous Enemy*, 195.

31. Bungay, *The Most Dangerous Enemy*, 91.
32. Ray, *The Battle of Britain*, 71.
33. Wood, *The Narrow Margin*, 23.
34. Bungay, *The Most Dangerous Enemy*, 93.

job."[35] Dowding's view of Leigh-Mallory was not much better. Following a request by Leigh-Mallory to allocate 29 of the 41 fighter squadrons to 12 Group, a request consistent with basing forces in a stand-off position, Dowding refused and stated to Park that the request showed, "a misconception of the basic ideas of fighter defense."[36] The third and last commander involved in basing decisions was Air Vice-Marshal William Sholto Douglas. Douglas served as Deputy Chief of Air Staff and, therefore, was not part of Dowding's command.[37]

Within the RAF, and even within Fighter Command, commanders had different opinions on what should comprise a proper air defense strategy. This difference of opinion affected the tactics advocated by commanders and the desirability of basing approaches to support them. The point of contention centered on the question of when best to engage enemy bombers. Specifically whether intercepting the bombers *before* they reached their target was necessary. Air Vice-Marshal Douglas, for example, did not believe it was important to engage bombers before their bombing run. He wrote, "It is immaterial in the long view whether the enemy bomber is shot down before or after he has dropped his bombs on his objective. Our object is not to prevent bombers reaching their objectives, though it would be nice if we could, but to cause a high casualty rate among enemy bombers, with the result that the scale of attack will dwindle rapidly to bearable proportions."[38] His opinion persisted after the battle writing, "I would rather shoot down fifty of the enemy bombers after they have reached their objective than shoot down only ten before they do so."[39]

The opposite view, held by Dowding and Park, espoused that they should focus on engaging Luftwaffe bombers prior to reaching their objective. Dowding and Park believed this focus was the best way to defeat the Luftwaffe. In addition, engaging bombers prior to their attacks agreed with Dowding and Park's understanding of what defense meant. They believed the best way to defeat the onslaught was not through a battle of attrition, but by convincing the Nazis that they could not achieve the goals of

35. Ray, *The Battle of Britain*, 19.
36. Bungay, *The Most Dangerous Enemy*, 93.
37. Bungay, *The Most Dangerous Enemy*, 94.
38. Bungay, *The Most Dangerous Enemy*, 94.
39. Bungay, *The Most Dangerous Enemy*, 94.

their bombing campaign. Such convincing required disrupting the Luftwaffe's ability to succeed in bombing their targets. Importantly, the British could only continue to disrupt the Luftwaffe if Fighter Command continued to survive—they aimed to keep an aerial force-in-being.[40] Maintaining a force-in-being required Dowding and Park to limit their losses while defending the elements that made the Dowding system effective. Therefore, in contrast to Douglas's view of defense, Dowding and Park would rather prevent a raid from causing significant damage by destroying ten bombers and disrupting the bomber formation instead of allowing a concentrated force of bombers to strike their target, followed by RAF fighters destroying fifty bombers.[41] The RAF pilots were eager to shoot down as many enemy bombers as possible, but they were also defending their nation. To permit German aircraft to conduct their attacks unobstructed, particularly against their countrymen and relatives, did not sit well with some of them. Ginger Lacey, an 11 Group pilot, expressed this sentiment in the following way: "We also believed that if you did not get to the enemy bombers before they bombed you were only half doing your job."[42]

Other factors influenced Dowding and Park's view on aerial defense. One factor reinforcing their view on engaging enemy bombers prior to their objective was that the German attacks could cause significant destruction. After the Luftwaffe successfully attacked British aircraft manufacturers, the Minister of Aircraft Production, Lord Beaverbrook, became concerned. German attacks had been so damaging against the small number of factories that he believed dispersing production for greater protection would become necessary. He subsequently lobbied the Air Ministry for a superior defense of these vital production centers.[43] Park issued orders to his controllers to provide the aircraft factories maximum fighter coverage while reiterating that they must meet the enemy's attack, "between the coast and our line of sector aerodromes."[44] Another factor was the continued, and very real threat of a Nazi invasion of the UK, which the Germans code-named "Sealion." Dowding worried the Nazis would parachute troops and land gliders to take the most southern bases on the coast thus providing a foothold for landing

40. Cooling, *Case Studies*, 117.
41. Bungay, *The Most Dangerous Enemy*, 94.
42. Robert Wright, *Dowding and the Battle of Britain* (London, UK: Macdonald & Co., 1969), 201.
43. Ray, *The Battle of Britain*, 90.
44. Ray, *The Battle of Britain*, 91.

additional forces.[45] This threat remained a concern for the British even after the Germans called off invasion plans. The impact on air defense was the need for the British to challenge German forces over the potential landing zones or beachhead, which planners suggested would take place on the southern coast.

Dowding and Park's desire to engage the enemy prior to the bombers reaching their targets influenced the placement of fighter bases and the tactics they used. Dowding and Park aimed to engage the enemy as soon as possible.[46] Bases positioned further south allowed fighters to take off and climb to engage the enemy in the shortest flight time while intercepting them as far south as possible. Such basing, however, also compounded 11 Group's greatest disadvantage: its short response time to Luftwaffe initiatives due to the close proximity of the German bases in the Pas-de-Calais area.[47] The connection between the two considerations is not necessarily self-explanatory. To better understand them it is necessary to place them in their operational context. The earliest warning of a Luftwaffe attack came from Chain Home. Radar coverage extended over the French coast giving the British visibility of the enemy massing for an attack. Nevertheless, Park could not launch aircraft as soon as he saw an assault massing as the Luftwaffe may have only formed for a feint to conceal another attack from another direction. [48] For example, while Luftwaffe aircraft formed in sight of British radar, they may also assemble large formations beyond or below the radar coverage. With their limited fighter resources, including pilots, the British RAF had to intercept the greatest threat concentrations at the correct time to avoid getting caught with aircraft on the ground refueling between sorties. To avoid such surprise, Park needed to wait with the majority of his aircraft on the ground until the Luftwaffe committed its forces to an attack against England. Only then would Park launch and concentrate his fighter defenses. The RAF flew continuous defensive patrols as well, but Park had to limit these patrols in order to preserve the bulk of his fighters to respond with the greatest force against incoming attacks.

Once the Luftwaffe committed forces to an actual attack, indicated by their movement across the Channel, approximately four minutes elapsed between when radar

45. Wright, *Dowding and the Battle of Britain*, 132.
46. Ray, *The Battle of Britain*, 71.
47. Ray, *The Battle of Britain*, 81, 84.
48. Collier, *Defence of the United Kingdom*, 172.

operators collected the information and when controllers updated their operational maps in the Group and Sector control rooms. In those four minutes, an incoming raid could travel three-quarters of the distance from Pas-de-Calais to Dover.[49] Following sector control's call-up of a Spitfire squadron it could take 13 minutes for the fighters to climb to 20,000 feet, the altitude necessary to intercept and attack the incoming Luftwaffe raiders.[50]

One way to better understand this abstract point is to depict it graphically. Figure 4 illustrates Fighter Command's intercept problem in terms of time, distance, and altitude. Range is presented in Figure 4 along the horizontal axis with London placed at mile zero. Locations north of London are listed as negative distances while locations south of London are listed as positive distances. The vertical axis represents elapsed time in minutes. At time zero the Luftwaffe at Pas-de-Calais were already airborne and commenced their attack north traveling approximately 180 miles-per-hour.[51] At that time, most British defenders were still on the ground at their respective bases, shown here as Duxford, Biggin Hill, West Malling, and Hawkinge to illustrate the effects of basing at different locations. A four-minute observation delay, in addition to 13 minutes of climbing time, results in the fighter defenses reaching their combat altitude 17 minutes after the Luftwaffe commenced their attack. At altitude, the Spitfires could then travel towards the attackers at approximately 350 miles-per-hour.[52]

49. Collier, *Defence of the United Kingdom*, 168.
50. Collier, *Defence of the United Kingdom*, 168. 13 minutes is from the source cited and Cooling, *Case Studies*, 130 where it stated "fighters need 10 minutes to reach 20,000 feet plus time to maneuver." Bungay, *the Most Dangerous Enemy*, 58 states 7.5 minutes to reach 20,000 feet but seems to suggest this time is only the climb not the climb plus positioning for attack.
51. Bungay, *The Most Dangerous Enemy*, 240. While the Bf109s have a higher maximum speed, Luftwaffe tactics required they stay with the slower bombers. Tactics changed through the battle but for the purposes of this illustration, and British emphasis on attacking bombers while avoiding fighters, the raid is represented as the speed of the Luftwaffe bombers.
52. Bungay, *The Most Dangerous Enemy*, 58.

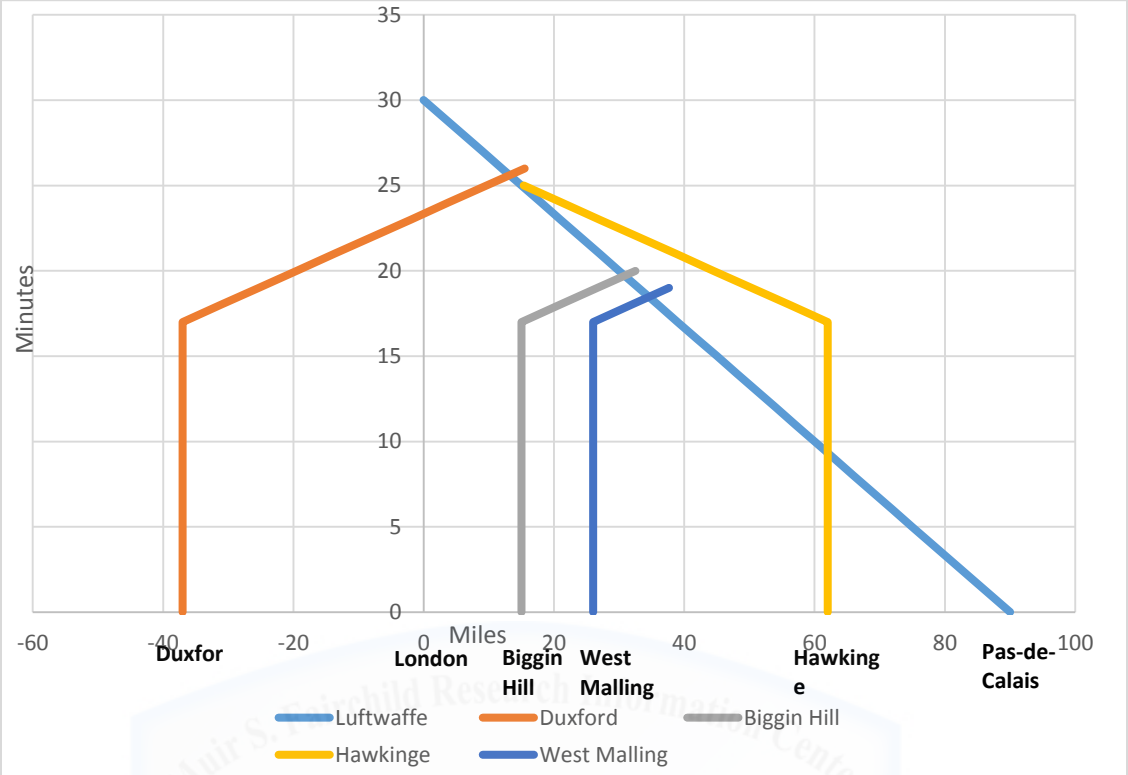

Figure 4: Fighter Intercept Time and Range[53]

Source: Author's Original Work

This illustration presents three ways to view the advantage of departing from bases south of London, such as Biggin Hill or West Malling, instead of a base further to the north such as Duxford (the southern-most base in 12 Group). The first way to view the advantage is operating further south allows intercepting the Luftwaffe sooner and further south—ostensibly further from the bombing target. From the bases south of London, RAF fighters could conceivably intercept Luftwaffe bombers in just under 20 minutes, at a range of about 30 miles south of London. This response time stands in contrast to fighters departing from Duxford, which would intercept the German bombers at just over 25 minutes and 15 miles south of London. More importantly, Luftwaffe

53. This figure is for illustration purposes and does not represent actual tactical maneuvers. For example, RAF fighters would not likely climb directly over their base until attaining 20,000 feet prior to heading in the direction of the Luftwaffe. However, the ground speed of the aircraft would be slower during their climb than at altitude and the illustrative point of the figure would remain constant.

bombers 15 miles south of London would have already reached the southern line of critical sector stations located at Kenley, Biggin Hill, and Hornchurch exposing them for a possible attack.

The second way to view the advantage is in maneuvering time after reaching operational altitude. If RAF commanders determine it acceptable to intercept the Luftwaffe a few miles further north, the southern bases provide more maneuvering time between reaching altitude and engaging the enemy. Pilots used additional time to position themselves higher, and with the sun behind them, in order to increase the effectiveness of their attack by diving in unseen—a well-established fighter tactic.[54] Departing from Duxford provides less time for such maneuvering if the desire is to intercept the raid south of London.

The third and final benefit is similar to the second. Instead of additional loiter time at altitude, the British could use the added time on the ground to decide whether and where to launch the defenders. The bases slightly south of London provided more time on the ground, which gave the RAF commanders greater flexibility in how, when, and where to use their forces while decreasing the chance they over commit to a feint.

Basing closest to the enemy, however, is not always the most appealing option. Figure 4, for example, also shows that the benefits of operating further south do not extend all the way to the coast. Operating from the furthest southern bases, such as the ones at Manston or Hawkinge, put the RAF fighters at a disadvantage against the Luftwaffe. Fighters operating from these bases did not have sufficient time to get to altitude prior to the enemy reaching their airfield. In fact, Figure 4 shows the Luftwaffe arriving at Hawkinge only slightly after the defending aircraft could take off. The Hawkinge defenders were not in a position to effectively defend their base from Luftwaffe attacks. Peter Townsend, a Squadron Leader during the Battle of Britain stated, "The trouble with Hawkinge was that, being right up in the front line, you had to climb *beneath* [emphasis added]the enemy at the mercy of his fighters."[55] Townsend's quote demonstrates that air defense of the bases and territory furthest south depended on

54. For a detailed discussion see Robert Shaw, *Fighter Combat: Tactics and Maneuvering* (Annapolis, MD: Naval Institute Press, 1985), 168.
55. Townsend, *Duel of Eagles*, 339.

aircraft already in the air flying combat air patrols, with all of the resource limitations that comes from such an approach. From the perspective of stand-off versus stand-in capability, there was a defensive "sweet spot," or optimal location, for bases. Basing at this location balanced flexibility of response time, intercepted bombers at the most southern point, and achieved combat altitude prior to the arrival of the Luftwaffe raid. The most southern airfields in this optimal location were probably in the range of West Malling or Detling (see **Error! Reference source not found.**). The optimal location depends on how a defending air commander weighs engaging the enemy further south against more effective maneuver and decision time.

The preceding discussion suggests that the best place to base fighters is dependent on one's idea of the most effective air defense strategy. At the time of the Battle of Britain, British commanders disagreed with one another about the most effective approach. For example, the 12 Group Commander, Air Marshal Leigh-Mallory, vocally advocated for a defensive concept known as "the big wing." Leigh-Mallory felt Fighter Command should focus its efforts on meeting the German bombers with the greatest number of RAF fighters concentrated in space and time.[56] Leigh-Mallory wanted time to form three or more squadrons into "big wings" prior to engaging the enemy. He believed "big wings" would reduce RAF casualties and increase the morale of the pilots in the squadrons. This intangible element of defensive combat was often crucial to the outcome of an air campaign. In hindsight, it is possible to overlook the impact of morale once the outcome of a battle is known. The morale of RAF pilots flagged considerably during this phase of the Battle of Britain for a number of reasons. The loss of squadron mates, fatigue and combat stress, as well as being constantly overmatched by better trained and more skilled Luftwaffe fighter pilots could have tipped the scales in the battle.[57]

The time Leigh-Mallory needed to form wings, however, had its own opportunity costs. Although Park accepted the value of attacking in larger numbers in principle, he was under time pressure of his own. As 11 Group commander, and with the responsibility for the air defense of London weighing heavily upon him, Park could launch no more

56. Ray, *The Battle of Britain*, 116.
57. Richard Hough and Richard Alexander, *The Battle of Britain: The Greatest Air Battle of World War II* (New York: Norton & Company, 2005), 284; Ray, *The Battle of Britain*, 116.

than two, and usually only one, squadron to meet the attackers.[58] Park pointed out that when Leigh-Mallory formed wings they would mainly engage, "outgoing, not incoming raids."[59] Park's point is illustrated dramatically in Figure 4. If the defenders from 12 Group, operating from Duxford, took any more time to form-up prior to heading south, it is likely the "big wings" would engage the Luftwaffe only after the bombers attacked their targets uncontested and begun returning south.

Leigh-Mallory's "big wing" approach seemed to agree more with the strategy averred by Douglas. This strategy emphasized destroying enemy forces—denying them the means to carry out their strategy—while accepting the risk of greater damage and destruction to friendly targets. Leigh-Mallory did, however, claim he could get a wing in position to defend in time if his forces were alerted when the enemy was over France.[60] To make this claim, however, misunderstands that Park could not call the wing when German aircraft were forming over France. The reason Park could not do so is simple, as it was not clear at that time the direction the raiders were headed, much less whether the formation radar observers viewed was even an actual attack. Alerting and forming up an entire wing for a possible feint risked catching the bulk of the RAF fighter force on the ground refueling when the actual raid appeared.[61] In reality, only a strategy to engage bombers after they attacked their targets could make the big wing approach acceptable.[62] This strategy would have encouraged the use of the stand-off approach from 12 Group. The airfields would have been in a safer location, the defenders would have greater time to engage the enemy with greater numbers, and commanders could have avoided being drawn into feints. But this approach also had costs, not least of which was the possible destruction of the Dowding system and disruption of the UK's war-making industry. These costs are the primary reasons Dowding chose not to pursue Douglas and Leigh-Mallory's strategy.

The second reason Dowding and Park chose to operate from the south was an emotional desire to defend all of Great Britain. This desire came from within Fighter

58. Cooling, *Case Studies*, 130; Collier, *the Defence of the United Kingdom*, 215.
59. Ray, *The Battle of Britain*, 122.
60. Ray, *The Battle of Britain*, 116.
61. Bungay, *The Most Dangerous Enemy*, 239.
62. Collier, *the Defence of the United Kingdom*, 215.

Command, but more importantly from the political leadership. Park saw his job as defending all the way to the coast which compelled him to keep his southern bases operational as long as he could.[63] He was not going to give up ground without a fight, in part because he felt it would negatively affect morale if he did.[64] Refusing to abandon any bases may have served to raise the morale of some British, however it does not seem likely the morale of the Airman operating from the bases on the coast could be counted in that group. Looking at the situation at Manston highlights this point.

Manston sat on the coast in Kent similar to Hawkinge. Therefore, like Hawkinge, the squadrons based there only had a few minutes warning before an incoming attack arrived. This short warning time provided no time for forces to take off and meet the enemy. Pilots who had to operate from this field wondered why it was not closed down.[65] Squadron Leader Townsend, for example, reported that an Airman named Jim Bailey found the courage after hearing they were getting repositioned from Hornchurch to Manston to ask his commanding officer, Philip Hunter, how it made any sense to send them there. Bailey's courage was further reinforced by the fact his squadron was equipped with the markedly inferior Boulton-Paul Defiant whose only offensive and defensive armament was housed in a turret facing the rear. His commanding officer responded, "We are in a position of honor, and we must accept it."[66] During the next Luftwaffe raid on Manston, Luftwaffe Ju-88s dove out of the sun and destroyed seven Defiants on the ground. During this raid at least three Defiants got airborne, led by Philip Hunter. Bf 109s trapped Hunter and his formation low against the Channel and brought down all three aircraft, killing the six RAF pilots and crew.[67] The virtual destruction of 264 Squadron marked the last time the RAF attempted to keep Manston fully operational.[68]

11 Group withdrew its fighters from the most forward airfields in order to have more time for aircraft to climb so as not to be at a disadvantage before they reached

63. Bungay, *The Most Dangerous Enemy*, 197.
64. Bungay, *The Most Dangerous Enemy*, 197.
65. Bungay, *The Most Dangerous Enemy*, 197.
66. Townsend, *Duel of Eagles*, 358.
67. Townsend, *Duel of Eagles*, 358.
68. Townsend, *Duel of Eagles*, 358.

altitude.[69] After the decision to withdraw forces, they used these fields primarily as temporary operating locations during the day to refuel aircraft based at permanent airfields in the safer locations further north.[70] In addition, other fields were closed completely and used only in the case of emergencies.[71] Four days after the German attack on Manston described above, Prime Minister Winston Churchill toured coastal defenses and saw the damage to the airfield. He reportedly was compelled, "to protest emphatically against the feeble method of repairing damage" and stated it was, "disproportionate to the value of this fighting vantage ground." [72] The RAF had not filled the craters because they could not prevent the Luftwaffe from bombing the field at will. Manston only remained open in August for political and propaganda reasons.[73] Churchill's statements demonstrate that political considerations, in addition to strictly operational ones, put pressure against fully abandoning any of the home air bases.[74]

The last factor that influenced operating from southern sectors was the efficiency of the Dowding System. The System did not necessarily require bases all the way to the coast, but each sector needed to remain operational. Sector operations drove basing decisions due to the way sector control maintained situational awareness. In order to identify the location of friendly aircraft and to vector them appropriately to their targets, the sector controllers obtained a radio fix from the fighter's on-board "Identification Friend or Foe" transmitter, called "Pip-Squeak." Sector Direction Finding rooms received Pip-Squeak transmissions and passed the information to the operations room to plot on the map.[75] But the Pip-Squeak receivers could not accommodate more than four squadrons at any one time.[76] Based on this very practical reason, moving too many aircraft north of London to North Weald, Northolt, or Debden would have impaired control within the Dowding System.[77] One of the advantageous aspects of the System

69. Cooling, *Case Studies*, 140.
70. Collier, *the Defence of the United Kingdom*, 173; Bungay, *The Most Dangerous Enemy*, 197.
71. Collier, *the Defence of the United Kingdom*, 173.
72. Townsend, *Duel of Eagles*, 370.
73. Johnson, *The Battle of Britain*, p173; Bungay, *The Most Dangerous Enemy*, 197.
74. Townsend, *Duel of Eagles*, 370.
75. Townsend, *Duel of Eagles*, 174.
76. Wood, *The Narrow* Margin, 177.
77. Bungay, *The Most Dangerous Enemy*, 197.

was its ability to disperse its forces for operational control reasons, which necessitated using the airfields south of London, while still maintaining overall operational control.

Notwithstanding these reasons, Dowding kept a significant portion of his force outside of the main operating area south of London in 11 Group. For example, just prior to the period under study, Fighter Command operated 19 of its best fighter squadrons (Spitfire and Hurricanes) from 11 Group while 29 squadrons operated from the other groups. By 7 September, after the period of intense Luftwaffe attacks countered by 11 Group, Dowding barely adjusted the distribution with 21 fighter squadrons in 11 Group while 31 remained elsewhere.[78] These forces were kept distributed across Great Britain because of British uncertainty in whether the Luftwaffe would attack from other directions. Therefore, the force distribution does not represent a stand-off approach since these forces were not held in other areas for the purpose of defending attacks from the south. They were meant instead to defend their own areas of responsibility. Dowding's approach paid off on 15 August when the Luftwaffe launched an attack from Norway to Northern England that was successfully intercepted and repelled with heavy German losses.[79] Dowding's conservatism resulted in him keeping significant forces in the north and west to protect against possible attacks, even after the primary assaults repeatedly came from the south.[80] This aspect of Dowding's basing decision, while still controversial and debated today, was not based on considerations of a stand-in versus stand-off approach as much as a decision on which operational area to prioritize.

The decision of Luftwaffe commanders on where to base their forces was much more straight-forward. Their primary concern was to position as close to England as possible to reduce the range and time it took the bombers to reach their targets. German basing considerations also reflected the fact they maintained the initiative of attack while not having to modify operations significantly to defend their bases from RAF attacks.

RAF Bomber Command conducted some operations over France but primarily focused on the German invasion forces. In addition, Bomber Command attacks on Luftwaffe airfields were not very effective. The German invasion forces in their

78. Collier, *the Defence of the United Kingdom*, 453-455, 472-474.
79. Ray, *The Battle of Britain*, 70.
80. Collier, *the Defence of the United Kingdom*, 215.

concentration areas nevertheless provided a large target for Bomber Command to find and attack making them a focus for practical reasons.[81] Bomber Command's effectiveness against airfields was hampered for two reasons. The first was the difficulty in hitting an airfield and putting it out of operation for a significant duration—the same difficulties the Luftwaffe faced in its attacks against English airfields. Bomb damage could be repaired relatively quickly, or aircraft could be launched and recovered from ad hoc grass strips. The second reason was that the Luftwaffe dispersed their forces to several hundred airfields across France, Belgium, Netherlands, and northern Germany, making any single attack irrelevant to Luftwaffe operations.[82]

Even though the Luftwaffe operated from many locations, they concentrated as many forces in the Pas-de-Calais area as possible, with priority going to the Bf 109s.[83] As previously mentioned the short range of the Bf 109 was a limiting factor in the Luftwaffe's effective bombing range. Even positioning squadrons of Bf 109s in the closest possible location gave them fewer than 10 minutes of flight time once they reached the London area.[84] They often had to break off attacks or return to base without finding the enemy or risk running out of fuel and ditching in the Channel.[85] The primary driver for German fighter basing was fuel considerations but they had other considerations as well. Werner Baumbach, who held the highest post in the Luftwaffe Bomber Command, expressed some of these other factors. He wrote in his notes during the war that the benefits of close bases were, "simply a matter of arithmetic—reduced flying distances, less wear and tear on personnel and material, less risk, less fuel to carry and so bigger bomb and mine loads. Efficiency has substantially increased as a result."[86]

By October 1940, signs began to appear that the Nazis no longer planned to launch an invasion. As early as 20 September, British reconnaissance flights observed six German destroyers and a torpedo-boat leaving the area. At the same time, barges decreased from 1,004 on 18 September, to 691 by the end of September, to 448 by the

81. Bungay, *The Most Dangerous Enemy*, 66.
82. Bungay, *The Most Dangerous Enemy*, 66; Collier, *the Defence of the United Kingdom*, 160; Werner Baumbach, *The Life and Death of the Luftwafft: Germany's "Lost Victories" of the Air by the Commander of Bomber Forces* (New York: Ballantine Books, 1949), 80.
83. Bungay, *The Most Dangerous Enemy*, 127.
84. Bungay, *The Most Dangerous Enemy*, 127.
85. Baumbach, *The Life and Death of the Luftwafft*, 83.
86. Baumbach, *The Life and Death of the Luftwafft*, 80.

end of October.[87] Also, the onset of autumn in October and its worsening weather meant the German air effort drastically weakened, although attacks against London still continued when conditions allowed.[88] It was not until January 1941, however, that Hitler finally officially called off the invasion plan.[89] British forces and its people were able to hang on through this trying time. By never relinquishing control of the skies over their nation they won the battle in the way defenders often do, by not losing.

Conclusion

The Battle of Britain case study offers unique insights into several of the basing approach factors identified in Chapter 1. Basing closer to the operational combat area reduced survivability for the British, increased loiter time, and reduced time to contact the enemy. By operating as close as possible to the operational area, the Luftwaffe achieved the same benefits, in addition to achieving greater operational depth. Dispersed bases, which were required due to operating from within contested areas, provided each side with the ability to attack or defend from multiple axes of approach while creating a targeting and response dilemma for their adversary. Furthermore, the British were influenced by political considerations, mainly the sustainment of national morale, to keep forces operating in a higher threat environment. However, the importance of each of these considerations was not equal. The value one places on any of them is determined by its importance with respect to the overall national strategic approach. For the Battle of Britain, this point is clearest by focusing specifically on the value of time.

The pressure of time will often result in a desire to operate from positions closer to the desired operational area. The pressure of time is different, however, for the side with the initiative and on the offensive, with more static targets, than for the side defending, responding to a more dynamic target environment. In the Battle of Britain, the Germans clearly had the initiative. They could assemble formations, choose their targets and times of attack, and use feints.[90] As a result, the RAF needed to respond to the German initiative. This circumstance created more pressure on the available time of RAF

87. Collier, *the Defence of the United Kingdom*, 227.
88. Collier, *the Defence of the United Kingdom*, 245.
89. Collier, *the Defence of the United Kingdom*, 227.
90. Townsend, *Duel of Eagles*, 361.; Collier, The Defence of the United Kingdom, 172.

commanders to observe the German's formations, determine German intent and direction of approach, decide where to send the fighters, and then get defensive fighters to the operational area.[91]

Adopting a strategy of engaging the bombers after they reached their targets, along the lines proposed by Douglas and Leigh-Mallory, would have reduced the benefits the Germans realized from having the initiative. RAF commanders' time constraints would have been relaxed, which would have made stand-off bases more desirable. In addition, RAF defenders would have more information after the Luftwaffe bombers attacked their target. RAF fighters would know with much greater precision where the Luftwaffe bombers were headed—back to their bases in France. In addition, the Luftwaffe aircraft would have less fuel and be unable to maneuver defensively as long, and RAF fighter defenses could better mass for attack and inflict greater casualties on German bombers. Of course, such a decision comes at a cost. Letting the bombers through to hit their targets unimpeded was ultimately unacceptable to the Prime Minister, Cabinet, Parliament, and British people—particularly Londoners. But there is another feature of the relationship of time to basing approach that requires further examination.

Much of the literature review on basing options treats reduced flight time and distance as *always* beneficial—even by those who advocate a stand-off approach. In fact, for the side on the defense, moving bases and engagement zone too close to an adversary can become an operational liability—even if bases are fully survivable. For the defender obliged to react to enemy attacks, there is a point at which placing the desired engagement zone and operational bases further forward has no advantage—a point absent from the literature discussed in Chapter 1. If a defender's proximity to an attacker does not provide enough time to marshal forces for defense prior to the attacker getting past the defender's desired engagement zone, then the defender is too close for operational benefit. The RAF commanders' placement of an engagement zone over Manston, on the coast, highlights this point. The time Manston fighters took to get to altitude over the base was longer than the time it took for the Luftwaffe to get over Manston. To reiterate, this argument does not depend on base survivability, which is the common concern of operating too close to an adversary. If Luftwaffe bombers never targeted Manston, the

91. Boyd, John R., "Organic Design for Command and Control," Unpublished Presentation, 1987, 26.

defenders at Manston would find themselves chasing the attacking bombers north after reaching the desired altitude. By the time the defenders caught the Luftwaffe bombers, they might as well have departed from a base further north and used the extra time to maneuver for tactical advantage prior to engagement.

Defending commanders wanted to reduce the time it took to marshal forces to the defensive position. To achieve this result in the Battle of Britain, commanders also used patrolling aircraft in addition to aircraft on the ground. Consistent with expected behavior, when aiming to maximize defensive aircraft conducting CAPs, the RAF used airbases on the coast as refueling locations even after they abandoned them as full operational bases. This behavior highlights the desire to construct bases closer to the operational area when an air force competes to reduce response time and increase numbers of aircraft available.

One feature of the Battle of Britain case study conflicts with the expectations listed in Chapter 1. Operating from many bases within a contested area can place greater strain on resourcing bases and providing command and control. This point was observed in the Operation Frantic case study and also agrees with evidence from the USAFE case study presented in the next chapter. For the RAF, however, the opposite condition existed. The RAF designed the Dowding System with dispersal in mind. Therefore, the technical capability of radios was based on the planned dispersed posture. To operate in a more consolidated posture would have degraded command and control abilities. This point highlights that force planners can alleviate difficulties in command and control of a stand-in approach if the capabilities are optimized for that environment.

The next two case studies serve as counter-examples for each other. During the 1950s, two USAF Commands faced a similar threat, yet they pursued different approaches with respect to basing and capabilities. Examining the political and operational factors commanders considered, with respect to their chosen strategy, reveals greater insight into pursing the stand-in or stand-off approach.

Chapter 4

USAFE's Dispersal Program

The first two case studies looked at basing considerations during wartime, while combat operations were underway. The next two case studies, in contrast, deal directly with force planning prior to expected hostilities when uncertainties are much greater. Chapters 4 and 5 address the efforts of United States Air Forces in Europe (USAFE) and Strategic Air Command (SAC) during the 1950s to posture their forces and develop capabilities to deter war with the Soviet Union, or fight war should deterrence fail. As these chapters make clear, neither was prepared for the threat they faced. They both had to change, which demanded USAFE and SAC each reconsider their approach to basing. As these two chapters show, they responded very differently to the identical threat. They responded differently because of the different ways their contribution of airpower contributed to the US strategy.

Chapter 4 shows USAFE's stand-in approach was shaped by two factors. The first factor was its role in demonstrating American resolve to its allies and the Soviets. The second factor was USAFE's operational role, which required it to maximize its sortie rates in the event of war. To achieve these ends, its planners pursued force planning initiatives that included new operational concepts, new weapon systems, building new bases, and initiating new training programs. Ultimately, obstacles including resource constraints and political limitations prevented USAFE from reaching its greatest stand-in ambitions.

Background and Context

The "iron curtain," dropped by the Soviet Union, draped across Europe during the 1950s. Its oppressive weight may have rested on the east, but its shadow darkened the entire continent. The Americans and their North Atlantic Treaty Organization (NATO) allies resisted what they perceived as an expansionary Soviet threat. The pivotal factor in

the West's security policy was to use nuclear weapons to deter Soviet aggression.[1] In particular, an important (if not the most important) part of Western security rested with the US Air Force's ability to counter a massive Soviet conventional attack with a devastating atomic response. The growing Soviet threat, however, led some American leaders and theorists to question whether a retaliatory atomic attack was possible if their forces were surprised on the ground. One group of leaders who wrestled with this question was in United States Air Forces in Europe (USAFE) as they considered their response to the growing Soviet threat.

Following WWII, American leaders viewed Western Europe as a vital national and global security interest. American leaders were concerned that a conflict on the continent would invariably lead to a Soviet victory and dominance over Europe and Asia and possibly overpower the US.[2] To the Americans, this amounted to the worst-case threat to their national security.[3] The United States would have to play a larger role in Europe to ensure the security of like-minded states in the West while countering an increasingly assertive Soviet Union in the east.

It was not immediately apparent to American leaders that the Soviet Union would present a post-war threat, at least not as soon as it did. The Soviet Union was devastated following the war, creating good reasons for it to delay future aggression or expansion.[4] After observing Soviet actions following the war, however, opinions began to change. The Soviets delayed withdrawal from northern Iran, exhibited threatening behavior toward Turkey, and increased efforts to promote communism in Eastern Europe.[5] The American national security decision-making consensus strongly consolidated on the viewpoint that the Soviet Union was a threat to the rest of Europe and America.[6] Most

1. Christoph Bluth, *Britain, Germany, and Western Nuclear Strategy* (Oxford, UK: Clarendon Press, 1995), 29.
2. Norman Friedman, *The Fifty Year War: Conflict and Strategy in the Cold War* (Annapolis, MD: Naval Institute Press, 2000), 25.
3. Eduard Mark, *Defending the West: The United States Air Force and European Security 1946-1998* (Washington, DC: Air Force History and Museums Program), 3.
4. Friedman, *The Fifty Year War*, 26, 79, 43-44; Mark, *Defending the West*, 7.
5. Mark, *Defending the West*, 9.
6. One of the first public articulations of this viewpoint was contained in an article by an anonymous author, "X," in *Foreign Affairs* in 1947. X (psuedo. George Kennan), "The Sources of Soviet Conduct," *Foreign Affairs* 25, no. 4 (1947): 566–582.

notably, Soviet support to communist forces in Greece led to the creation of the Truman Doctrine and several months later, the Marshall Plan.[7]

Convincing Europeans that US commitments to their security were credible would persist as a challenge for the Americans throughout the Cold War.[8] The cornerstone of American commitment was enshrined in the North Atlantic Treaty signed April 1949, which committed all members to treat an armed attack on any member as an attack on all. The wording of the commitment allowed each nation to decide how best to respond should an attack occur. Such discretion only added to, as opposed to easing, European anxiety of being abandoned in a time of critical need.[9] Further complicating American ability to demonstrate commitment was the constitutional requirement for Congress to declare war. US Senators pushed for language that made it clear that the Treaty did not contain an automatic commitment to go to war, much to the consternation of European leaders.[10] To alleviate European concern, the Senators agreed to state explicitly in the Treaty that potential responses included, "the use of armed force." [11] The problem would persist, however, as the value of the treaty was only as strong as the perception the US would choose to defend Europe in the event of war.[12]

European leaders had an easier time believing US commitment to defend Europe during the years it had a monopoly on atomic weapons. After the Soviet Union detonated an atomic bomb in 1949, making it a nuclear power, European leaders understandably questioned how much risk the US would accept to protect European security. This concern only became stronger as Soviet atomic capabilities improved. By the early 1950s, British Ministry of Defence Chiefs of Staff stated they doubted America, "would be willing to continue subsidizing European defense indefinitely."[13] American leaders needed to combat this doubt if they wished to keep the military alliance unified. This wish required they maintain a visible presence in Europe to leave no doubt America was

7. Mark, *Defending the West*, 9.
8. Beatrice Heuser, *NATO, Britain, France and the FRG: Nuclear Strategies and Forces for Europe, 1949-2000* (New York: St. Matin's Press, 1997) 15.
9. Heuser, *NATO, Britain, France and the FRG*, 2.
10. William Park, *Defending the West: A History of NATO* (Boulder, CO: Westview Press, 1986), 12.
11. Mark, *Defending the West*, 13.
12. Mark, *Defending the West*, 13.
13. Heuser, *NATO, Britain, France and the FRG*, 16.

putting its forces at risk for Europe's defense.[14] This imperative would persist through the 1950s and beyond. After an air defense advisor to NATO suggested in 1957 that the Americans remove much of USAFE from West Germany, the Commander-in-Chief of USAFE, General William Tunner, responded forcefully, "What would be the effect of this withdrawal on the other members of NATO? We must show the countries that we are with them. Any sign of weakening or reducing our forces will nullify all of our actions over the past few years."[15]

The US Air Force (USAF) maintained forces in Europe from WWII onward although organizationally those forces assumed many different shapes in the early years. Immediately following the war, the USAF total force posture dropped from 17,000 aircraft and 450,000 personnel to 2,300 aircraft and 33,000 people.[16] In a reflection of its importance, USAFE was established as a specified command reporting directly to the Joint Chiefs of Staff for a period of time. After the NATO command structure had been formed, however, USAFE's command relationships were altered making it a subordinate command of US Forces Europe in June 1952.[17] USAFE's mission was to deter aggression. Should Soviet aggression occur, it was also ready to respond with potent force, up to and including the use of tactical nuclear weapons.[18]

The USAF was critical to deterring Soviet aggression in large part because of the conventional numerical superiority the Soviets possessed over the West. Numerical inferiority resulted in two general missions for the US Air Force should war break out with the Soviets. The first was the strategic air offensive against the Soviet homeland,

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14. In addition to adding credibility to the US commitment to defend its Allies, the placement of American forces in Europe provided what came to be called a "trip wire" to trigger possible escalation to nuclear war. The concepts are related yet there is a subtle difference. Through one perspective, American military presence *demonstrated* American commitment. Through the other perspective, American military presence *forced* American commitment if the Americans were overrun by a Soviet attack. A thorough discussion on the "trip wire" role of American forces can be found in Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 47.
15. Lt Gen William Tunner CINCUSAFE to Major General Grandison Garnder (ret) Advisor to SHAPE Air Defense Technical Center, letter, "Air Defense: Objections to Recommendations that USAFE Move Out of Germany," 31 May 1957 in History, United States Air Forces in Europe, 1 Jul-31 Dec, Vol II.
16. Thomas S. Snyder and Shelia A. Shaw, *United States Air Forces in Europe Historical Highlights 1942-1992* (Ramstein Air Base, Germany: Headquarters United States Air Forces in Europe, 1993), 3.
17. Historical Division Joint Secretariat, *US Unified Command In Europe* (Washington, DC: Joint Chiefs of Staff), 4-5, 9.
18. USAFE, "(UNCL) Reduction of USAFE Tactical and Logistic Vulnerability (Short Title: USAFE Dispersal Program)," 15 January 1955, 1.

which is covered in Chapter 4. The second is the interdiction of Soviet forces advancing in Europe, a task that went primarily to USAFE.[19] One of the early NATO operational plans, DC 13, stressed the use of tactical aircraft for active defense. Active defense employed mobile ground forces for local offensive action when opportunities presented themselves. USAFE aircraft would attack the enemy's mobile ground forces and destroy lines of communication and rear areas to prevent Soviet forces from penetrating deep into Western Europe.[20] In addition, it had a significant air defense role that required USAFE to react to Soviet air attacks. In 1957, USAFE had a requirement to provide over 830 fighter-interceptors and 1,040 day fighters.[21] If called upon, USAFE had to fight in a dynamic environment where its organization and forces would need to adapt quickly to the changing operational situation.

The Soviet detonation of its first atomic bomb in 1949 was followed rapidly by its first thermonuclear bomb in 1953.[22] Intelligence estimates projected the Soviet Union would have approximately 100 atomic weapons by the middle of 1953.[23] It was also during this time, from 1953 to 1957, that Soviet military doctrine went through significant changes.[24] Soviet military writers emphasized long-range aviation, readiness to fight from the beginning of hostilities, and achieving surprise as the keys to success in future war. Additionally, the Soviet doctrine, like the American, recognized the importance of nuclear weapons. From 1953 to 1960, the Soviet Union developed its intercontinental nuclear delivery capability, including manned bombers and aerial refueling capability in 1956 as well as rockets.[25]

In 1954, USAFE already committed itself to defending Europe, but would have to do more to keep pace with the Soviets and assure NATO of its commitment to European defense. USAFE combat air forces consisted of Third Air Force, Twelfth Air Force, and Seventeenth Air Force, operating from 15 airfields, of which five were in West Germany.

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19. Mark, *Defending the West*, 15.
20. Mark, *Defending the West*, 19.
21. Maj General Herbert D. Thatcher, Vice CINCUSAFE, to EUCOM Air Defense Requirements, letter, "EUCOM Air Defense Requirements," 10 July 1957, in History, United States Air Forces in Europe, 1 Jul-31 Dec, Vol II.
22. David Hollow, *Stalin & The Bomb* (New Haven, CT: Yale University Press, 1994), 265,306.
23. Hollow, *Stalin & The Bomb*, 322.
24. William S. Borgiaz, *The Strategic Air Command: Evolution and Consolidation of Nuclear Forces, 1945-1955* (London, UK: Praeger, 1996), 109-110.
25. Borgiaz, *The Strategic Air Command*, 109-111.

These airfields relied on only two depot installations for support.[26] USAFE was just one component of the total American military presence in Europe. Furthermore, the US was only one of 14 nations in the NATO alliance, led militarily by the Supreme Allied Commander Europe (SACEUR) and Supreme Headquarters Allied Powers Europe (SHAPE).[27]

The USAFE base presence was not large and relatively vulnerable compared to the Soviet threat it faced. USAFE staff assessed that, "as few as 15 well placed atomic weapons could constitute a fatal blow if the current USAFE dispositions are maintained."[28] Fifteen atomic weapons was a small amount given intelligence estimates suggested that the Soviet Union could have approximately 100 atomic weapons and possibly as many as 200. [29] In November 1953, SHAPE, "notified its three regional commands that growing stockpiles of atomic weapons in the hands of the potential enemy had greatly increased the possibilities of loss of Allied aircraft and equipment on the ground in a future war."[30] USAFE bases contained a significant portion of NATO retaliatory strength, leading its leadership to believe they were likely targets for a Soviet nuclear strike.[31] The *Carte Blanche* military exercises in the mid-1950s supported their view. It simulated the exchange of nuclear weapons on the European continent and determined that a potential spasm of nuclear violence would destroy virtually all Western military forces, including most airbases.[32]

Starting in 1953, SHAPE planners gained a greater appreciation for the Soviet threat. They resolved to disperse their forces to a greater degree to ensure enough would survive an initial Soviet atomic attack in order to mount a retaliatory strike. In July and August of that year, USAFE and Twelfth Air Force participated in a NATO study called "Project Whiskey" to determine the number of atomic weapons needed under the control of SACEUR. The USAFE participants came away from the study with a greater appreciation of the risks to their existing force posture and distribution. They realized

26. United States Air Forces in Europe, "USAFE Dispersal Program," 1, A-8.
27. NATO had 12 original members; Turkey and Greece joined in 1952.
28. United States Air Forces in Europe, "USAFE Dispersal Program," 1.
29. Hollow, *Stalin & The Bomb*, 322.
30. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 64.
31. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 62.
32. Bluth, *Britain, Germany, and Western Nuclear Strategy*, 33.

with greater clarity the need to change the USAFE force posture from the existing method of entire wings at each base to something much more dispersed. As a result, USAFE staff strove to disperse aircraft, personnel, and equipment as immediately as possible.[33] By the end of 1953, all levels of NATO command adopted this concern as SHAPE planners began work on a NATO-wide dispersal program by early November.[34]

Allied planners believed dispersing assets possessed several advantages over concentration. The primary advantage was reducing vulnerability to atomic attack and sufficiently increasing its survivability to enable retaliation.[35] USAFE also identified that dispersal increased the deterrent effect. Planners stated the real value of dispersal was eliminating lucrative targets that could entice the Soviets to strike. They wrote, "The purpose of the dispersal program . . . is to provide sufficient dispersal to reduce to a minimum those factors contributing to the eligibility of a target (or area) for atomic attack while still retaining an operationally acceptable sortie capability."[36] The planners espoused the notion that the primary contribution of dispersal to the defense of Western Europe was deterring an adversary from initiating hostilities in the first place. Dispersal would introduce uncertainty into the minds of the Soviets on whether a first strike, or surprise attack, would be profitable, thus convincing them to not initiate hostilities.

Gaining awareness of the problem and the decision to disperse came rather easy to the Airmen staring down the barrel of the proverbial Soviet nuclear gun. Deciding how exactly to disperse and accomplish the change, however, was much more difficult. The RAND Corporation conducted a series of studies in the early 1950s that demonstrated base vulnerability from bomber attack and suggested ways to improve survivability.[37] Guided by these studies, Twelfth Air Force planners developed a solution called the "Split Wing" system, which they preferred over either a "Wing Forward" or "Wing Rear"

33. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 31.
34. History, United States Air Forces in Europe, 1 July - 31 December 1954, Volume I, 64.
35. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, viii.
36. United States Air Forces in Europe, "USAFE Dispersal Program," A-2.
37. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 32-33.
These reports included: "A Study of Tactical Air Base Employment Concepts for European Theater-Working Data (RM-944); Logistic Requirements: Tactical Base System (RM-961); Base Development Policies for US Tactical Air Force in Europe—Basic Strategic Outcomes; Fourth Rand-Air University Exercise 3-8 Dec 51 (RM-725-1); and European Theater Air Base Location—An Exploratory Study—Plans Analysis Section (RM-685-1)

solution.[38] The Wing Forward concept was essentially the existing USAFE posture. In this concept, USAFE positioned full wings at airfields near the expected combat zone. In contrast, the Wing Rear concept proposed deploying full wings to airfields, "in a remote area out of range of enemy fighter and ground attack aircraft." [39] Twelfth Air Force leaders rejected both of these solutions. The Split Wing approach consisted of deploying combat activities to airfields near the expected combat zone while positioning noncombat activities, to include operational support, at bases that were relatively isolated from immediate Soviet threat. Twelfth Air Force declared this approach was superior on both "operations and logistics grounds." [40]

In early 1954, while Twelfth Air Force worked on its Split Wing solution, USAFE staff developed a different plan for dispersal. The USAFE plan called for each squadron, when alerted, to deploy from their peacetime wing-centered Main Operating Base (MOB) to a squadron complex. Each squadron complex consisted of a Dispersed Operating Base (DOB), a Dispersed Landing Area (DLA), and a Dispersed Parking Area (DPA). Each squadron complex would be separated by at least 30 miles. Furthermore, within each squadron complex planners would separate the DOB and DLA by 10 miles. To increase separation and complicate Soviet targeting, DPAs would be more than three miles from the DOB or DLA they support.[41] The DLA, more than its name suggests, served not just as a landing site to hide aircraft but as a second operating base for the squadron—although one with less support capability. Only DOBs would have maintenance and fuel services while DLAs would only have fuel to top-off aircraft between sorties.[42] Last, USAFE would park no more than eight aircraft at any one site within a squadron complex at any one time.[43] Therefore, this plan called for each location (either a DOB or DLA) to host half a squadron of aircraft during wartime.

USAFE Staff presented their plan to Twelfth Air Force on 24 May.[44] Major General Robert M. Lee, the Twelfth Air Forces Commander, subsequently accepted the

38. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 34.
39. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 35.
40. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 35.
41. United States Air Forces in Europe, "USAFE Dispersal Program," A-3.
42. United States Air Forces in Europe, "USAFE Dispersal Program," D-3, D-4.
43. Snyder and Shaw, *United States Air Forces in Europe*, 52. USAFE, "USAFE Dispersal Program," A-5.
44. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 37. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 64.

USAFE proposal as the basis for further dispersal studies. He assigned personnel to participate with USAFE in a working group to further develop the concept in the coming weeks.[45]

USAFE and Twelfth Air Force planners understood that implementing the dispersal concept would take many years and require organization, doctrine, and training changes. Further, Headquarters Air Force would have to approve and fill additional personnel positions and procure new equipment. The planners also understood that gaining access to more bases required working through the Air Force, DoD, and NATO bureaucracy followed by lengthy, laborious, and potentially frustrating multi-national negotiations. Outlining some of the requirements generated by the dispersal concept provides insight into the size of the dispersal effort. In addition, it highlights the types of activities needed to develop a resilient and survivable basing posture in the face of such significant threats.

USAFE would have to acquire new types of equipment to make the dispersal plan a reality. For example, USAFE developed aircraft trailers to tow aircraft the three miles that separated dispersed parking areas from a DOB or DLA. They established a requirement that, "Sufficient aircraft trailers and prime movers will be available to move eight aircraft to or from DOBs or DLAs to DPAs within one hour and will be capable of traversing improved and unimproved roads and normal form type terrain."[46] Procurement responsibility was turned over to Air Materiel Force, Europe (AMFE) which worked with local German contractors to develop multiple solutions. AMFE tested each proposed solution with every aircraft type on various types of terrain to select a winning design.[47] By the end of 1954, AMFE placed an order for 115 trailers.[48]

Early in the process USAFE planners recognized they would have to pre-stock maintenance equipment, fuel, and ammunition at the dispersed bases. The pre-stock equipment required the duplication of many items squadron regularly used. The squadrons could not move much of the equipment to the DOBs on short notice when hostilities began. Therefore, they needed to purchase and pre-stock additional sets of

45. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 67, 71.
46. United States Air Forces in Europe, "USAFE Dispersal Program," A-5.
47. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 163.
48. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 91-92

redundant equipment to place at the DOBs and DLAs. [49] Of course, supplies and equipment at dispersed bases needed to be guarded and maintained. USAFE planners established caretaker elements positioned at each DOB to protect the facilities and pre-stocked supplies.[50] USAFE estimated that each detachment required three officers, 22 Airmen, and 24 workers from the local population, positions Headquarters, Air Force would have to authorize and fill.[51]

In the event of war, the original dispersal plan called for the major air depots to provide wartime supplies directly to the MOBs. The MOBs would then provide supplies to the dispersed bases. However, this plan would not work. USAFE leaders quickly acknowledged the major depots would themselves become prime targets. Even if the depots survived, USAFE could not count on supplies reaching the dispersed bases from the MOBs due to the high likelihood they would not survive the initial attacks.[52] It was this possibility, however, that encouraged the dispersal of squadrons in the first place. Any plan that required the continued existence of MOBs was not consistent with the rationale to disperse. Consequentially, USAFE presented a plan to build a series of Operational Support Bases (OSB) in rear areas to further reduce vulnerability. During peacetime, USAFE would stock multiple OSBs with essential resources and equipment. In comparison, the existing posture concentrated these resources at only one location.[53] USAFE planners explained at the time, "Our depot structure is vulnerable to atomic attack. Therefore, an alternate means of support must be established. Presently, all wing base supply in the Central area is furnished from Chateauroux—a single supply point. Under this plan, the Operational Support Base will be used as a dispersed depot supply facility for war risk items." [54] In all, the plan called for six OSBs during peacetime located in France and Spain that would expand to a total of nine during wartime. Each OSB could support two wings that typically could consist of six squadrons at twelve dispersed locations (not including DPAs).[55] Following this approach allowed supplies to

49. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 48.
50. United States Air Forces in Europe, "USAFE Dispersal Program," A-4.
51. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 30-31.
52. United States Air Forces in Europe, "USAFE Dispersal Program," D-8, D-9.
53. United States Air Forces in Europe, "USAFE Dispersal Program," D-9.
54. United States Air Forces in Europe, "USAFE Dispersal Program," D-3.
55. Access to the first bases in Spain were negotiated at the same time the USAFE devised their dispersal plan presenting additional opportunities to position support functions further from the Soviet threat.

reach any dispersed site through multiple paths, either through a MOB or direct from an OSB. In addition, the OSBs would perform field maintenance to include engine build-up, radio, armament and electronic equipment repair, and major battle damage. Meanwhile, maintenance Airman at the dispersed bases would only perform preventative or minor maintenance activities.[56] These changes aligned the USAFE dispersal plan with the solution Twelfth Air Force had originally advocated.

The dispersal plan further required squadrons to move a reserve of supplies and equipment to different sites during periods of increased tension. Most importantly, the pre-stocking of supplies included POL to last seven days and ammunition.[57] In addition, the squadron would move a 15-day supply kit when it dispersed.[58] The plan embraced the goal to provide a "logistically independent" squadron—at least for about the first week—that could perform the majority of its routine maintenance and support at the DOB.[59]

Planners also aimed to increase passive and active defenses at the MOBs and DOBs. The passive defense measures included building shelters and revetments for aircraft and equipment, toning down the colors at key installations, concealing equipment, and local dispersal of forces within the installation.[60] Furthermore, USAFE constructed inflatable deception devices mimicking aircraft on the ramp.[61] Passive defense also included the availability of standby extra equipment including air-transportable emergency refueling units to refuel aircraft in emergency conditions. USAFE also procured equipment to conduct rapid repair. These items included equipment to repair bomb damage on runways, taxiways, and hardstands. The planners envisioned pre-stocking enough repair supplies to sustain operations for the first 90 days

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AFCAV COFS WASH DC to CINCUSAFE WIESBADEN GERMANY, letter, "Planning for Spain, Personnel and Facilities," 19 January 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II. USAFE, "USAFE Dispersal Program," B-2.

56. United States Air Forces in Europe, "USAFE Dispersal Program," A-6.

57. United States Air Forces in Europe, "USAFE Dispersal Program," A-4.

58. United States Air Forces in Europe, "USAFE Dispersal Program," D-2.

59. United States Air Forces in Europe, "USAFE Dispersal Program," D-2.

60. CINCUSAFE to COFS USAF Washington DC, electronically transmitted message, "Hardening of Facilities at Overseas bases," 12 July 1954, in History, United States Air Forces in Europe, 1 July - 31 December 1954, Volume VI.

61. Warren H. Boyer, DAF, to COFS USAF WASH DC, letter, 12 July 1954, in History. United States Air Forces in Europe, 1 July - 31 December 1954, Volume VI. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 66.

of an enemy attack.[62] In addition, USAFE established its Combat Operations Center within a large wooded hill used by the Germans during WWII as a command post and facility for ammunition storage, called Kindsbach Cave.[63] USAFE attempted to strengthen active defenses, although with less success. It took measures to acquire antiaircraft guns to add greater protection to dispersed sites from low-flying aircraft. Ultimately, the USAFE request was denied by US European Command since it was the US Army Europe's (USAREUR) responsibility to conduct ground-based air defense. USAREUR, however, did add the USAFE dispersed airfield requirement to subsequent air defense plans.[64]

After the May 1954 meeting between USAFE and Twelfth Air Force planners, the latter took a leading role in further developing and testing the dispersal plan. First, it conducted Exercise Vapor Trail from 16 August to 30 September 1954.[65] The 36th Fighter-Bomber Wing (36th FBW) dispersed to multiple bases per squadron, demonstrating the feasibility of the eight aircraft-per-field policy generated at USAFE.[66] Specifically, the exercise tested whether the squadrons could maintain an acceptable degree of operational capability while in the dispersed posture.[67] Operational capability was measured by comparing the programmed flying hours against actual flying hours as each squadron completed its scheduled sorties.[68] In this scaled-down demonstration, the 36th FBW operated from three DOBs that each had three DLAs with one main operational base located in the rear for support.[69]

The 36th FBW successfully demonstrated the concept, but the exercise was not without significant problems. Problems included determining the optimal maintenance activities performed at the dispersed locations, insufficient personnel levels, poor communications, and inadequate supervision over flying activities.[70] The 36th FBW referred to its maintenance approach at the dispersed airfields as the "screwdriver

62. History, United States Air Forces in Europe, 1 July - 31 December 1954, Volume I, 67.
63. History, United States Air Forces in Europe, 1 July - 31 December 1954, Volume I, 50.
64. History, United States Air Forces in Europe, 1 July - 31 December 1954, Volume I, 88.
65. History, Twelfth Air Force, 1 January - 31 December 1957, Volume I, 11.
66. United States Air Forces in Europe, "USAFE Dispersal Program," B-2, B-3.
67. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 39.
68. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 42.
69. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 39.
70. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 44.

concept." Its name captured the notion that only the most minimum capabilities were placed forward with almost all activities performed at the rear main base. The 36th FBW determined this approach was inadequate to maintain aircraft availability at necessary levels to support the required sortie rates for operations. Shortly into the exercise Wing leaders changed the approach to the crew-chief capability concept, which moved additional Airmen and capability to the DOBs. This approach provided greater ability to service aircraft and keep flying operations at acceptable levels, but it overloaded the wing personnel levels. The dispersal concept stressed filling armament positions as well. Armament and maintenance together were only able to fulfill 51 percent of their personnel requirements when positioned in the dispersed posture.[71]

An equally troubling problem that became evident during Exercise Vapor Trail was the ability to command and control the dispersed operations.[72] Commanders primarily communicated through the Deutsch Post (the German equivalent of the US Mail) facilities for the bases in Germany.[73] They viewed this method as inadequate, however, for two reasons. First, the telephone system within the Deutsch Post facilities was highly centralized through toll centers in large cities that were vulnerable to disruption in wartime. Second, planners believed that communist elements infiltrated the Deutsche Post Telephone Company. Their belief was even stronger with respect to the French Postal Telegraph and Telephone System. The USAFE dispersal plan stated, "It is reasonable to assume that large-scale sabotage efforts will be conducted against these telephone systems concurrently with the outbreak of hostilities."[74] The second reason was that the Soviet Bloc had a well-trained communications jamming capability in proximity to Germany and France.[75] This reason led to one of the most significant recommendations from Exercise Vapor Trail. In order to command and control dispersed forces, the communications architecture in Europe would have to be significantly improved with jam-resistant technologies. USAFE had already begun this process, but it would gain additional urgency after Vapor Trail. The new system relied on mobile microwave

71. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 44.
72. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 45.
73. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 44.
74. United States Air Forces in Europe, "USAFE Dispersal Program," E-3.
75. United States Air Forces in Europe, "USAFE Dispersal Program," E-2, E-3.

communications backed by High Frequency (HF) transmitter/receivers. Commanders would only use the landlines through the telephone system as a last resort.[76] Microwave systems were superior to HF since they were harder to jam and carried significantly more bandwidth, a capacity Twelfth Air Force required.[77]

Exercise Vapor Trail also accentuated the dire need to further reduce rear base vulnerability. Specifically, planners identified the need to locate the bases far enough to the rear to remain out of danger of enemy aircraft and by further dispersal.[78] Increased dispersal included establishing the Wing Combat Operations Command and Command Post at one of the DOBs while the remainder of the wing headquarters staff would move to a rear base.[79]

The USAFE plan took shape following Exercise Vapor Trail, allowing the staff to codify an official command concept in January 1955. The plan called for 43 DOBs, 43 DLAs, and 29 DPAs for a total of 115 sites distributed mainly across Germany and France. An additional nine OSBs were spread across France and Spain.[80] USAFE planners understood their plan required extensive investment; nevertheless, they determined such costs were necessary. In 1954, they estimated the complete dispersal program for fiscal years 1954 through 1957 would cost $110.4 million ($959.2 million in 2015 dollars).[81] USAFE planners attempted to put these costs into perspective asserting, "The cost must be considered in terms of the measures considered essential to permit tactical air units to survive an enemy atomic air attack and to retaliate. During the 'cold war' the cost, whether it be considered in terms of funds, materiel, personnel or real estate, must be measured in terms of the increased air capability confronting the enemy as

76. Lt General William Tunner to Chief of Staff, USAF, letter, "CINCUSAFE's Monthly Summary," February 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 46.
77. United States Air Forces in Europe, "USAFE Dispersal Program," E-3.
78. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 45.
79. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 47.
80. HQ USAFE, "USAFE Policy on Priority of the Interim Development of Dispersal Airfields and Facilities," 13 April 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 29.
81. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 67. Inflation adjustment using Bureau of Labor Statistics, Department of Labor, CPI Calculator http://data.bls.gov/cgi-bin/cpicalc.pl

a positive influence in preventing a 'hot war.'"[82] In short, they argued that though this plan was expensive, to do otherwise would be even worse.

In the complicated menagerie of commands and command relationships, USAFE and Twelfth Air Force were not alone in devising a dispersal plan for allied airpower. During the same time, SHAPE conducted similar exercises. In November, SHAPE released the results of their study that differed from the USAFE approach in two significant ways. The first difference was that SHAPE suggested maintaining squadron-sized forces permanently deployed at dispersed airfields during peacetime. Second, SHAPE caveated the requirement to keep a maximum of eight aircraft at any one site by stating they would only seek construction of new airfields to provide sufficient dispersal as a last resort. [83]

SHAPE was much more sensitive than USAFE planners to the reluctance of European nations towards allocating real estate to build more airfields. USAFE staff responded to the SHAPE proposals by first stating that permanent dispersal of tactical units during peacetime was not required. They felt that both "economy of operations" and the morale of units made it more desirable to operate from wing organizations at permanent bases during peacetime. In addition, USAFE planners believed that if war started, a quick dispersal in a "routine and orderly fashion" was possible.[84] General Tunner, the USAFE Commander, reiterated this point in a letter written in late January 1955 stating, "I do not believe it is either practical or feasible to require the permanent dispersal of tactical units all the time prior to D-Day . . . what is needed is proven capability for quick dispersal in an orderly and routine manner."[85] Second, it became apparent that full dispersal to no more than eight aircraft per site, as USAFE desired, would require many more airfields than currently existing in NATO. Since most NATO nations opposed additional airfield construction, SHAPE resigned its plan to disperse no further than one squadron per base.[86]

82. United States Air Forces in Europe, "USAFE Dispersal Program," 4.
83. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 140.
84. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 82.
85. United States Air Forces in Europe, "USAFE Dispersal Program," General Tunner Letter, A-18.
86. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 141

At the beginning of 1955 the extent of the dispersal was a point of disagreement between USAFE and Air Chief Marshal Basil Embry, the AIRCENT (Air component of NATO Central Command) commander. USAFE subordinate unit commanders, however, seemed to grasp the political sensitivities of dispersed basing more than USAFE leaders. In January 1955, the commander of Twelfth Air Force notified General Tunner of the difficulty of establishing new airfields in West Germany stating, "information available here now indicates the future status of these . . . sites . . . may be doubtful because of political considerations."[87] By March, General Tunner was forced to acknowledge the short-term obstacles to achieving the USAFE plan. He advised AIRCENT that he fully supported the SHAPE proposal to use only available facilities, even if doing so resulted in a reduction of dispersal standards.[88] General Tunner, however, stated "I do not propose a compromise in objectives, but believe partial dispersal at once is better than no dispersal indefinitely."[89] The official USAFE dispersal plan remained committed to disperse fully.

The dispute on the extent of dispersal, even while temporarily resolved, was only the first occurrence of USAFE planners compromising their dispersal ideal when confronted with reality. The coming years would see many more instances. The two primary problems with executing even the modified individual squadron-per-base plan were obtaining sufficient funds and gaining the access rights at the necessary bases. General Tunner led the effort to secure funding from the Air Force. Prior to Air Force leaders allocating the funds that General Tunner requested, they required greater assurance that NATO's member countries supported the plan. The Air Force quite reasonably did not want to allocate funds only to discover USAFE could not implement the program. General Tunner traveled to Washington in the spring of 1955 to brief Air Staff on funding requirements, before any agreement within NATO had materialized. Even though there was tentative agreement on the dispersal plan between USAFE and

87. COMDR 12TH AF to CINCUSAFE, electronically transmitted message, "Dispersal: Virgin Sites," 7 Jan 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II.
88. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 142.
89. Maj Gen Mark E. Bradley, Vice CINCUSAFE to Hq USAFE Staff Agencies, memorandum, "USAFE Central Area Single-Squadron Dispersal Program," 9 Aug 1955 in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 142.

AIRCENT, there was no firm SHAPE policy that could establish the justification for securing Air Force funds.[90] Therefore, while the Air Staff supported the USAFE concept "in principle," nothing was done to add infrastructure funds to the upcoming Air Force funding requests. There was, however, a way around the funding problem.

During 1954, even before the agreement on the plan with AIRCENT, USAFE presented its dispersal plan to USAREUR and received approval to use Deutsche Mark occupation funds for all requirements in the Federal Republic of Germany (West Germany).[91] USAREUR's approval allowed USAFE to begin upgrading airfields in Germany. USAFE was also in a favorable position in West Germany for obtaining the necessary land for some additional bases. There were certainly practical limits within West Germany on how much land USAFE could obtain, especially given it was not the only military command looking to disperse its forces at more locations. However, the Allies could use the substantial leeway they had as occupying powers in the Federal Republic to allocate land for airfield construction.[92] Strong local opposition could still halt the program. Therefore, USAFE sent several briefing teams to land management officials within the German local governments to gain support. These officials showed little interest in authorizing land use for USAFE's dispersal requirements.

The West German reluctance inhibited USAFE's efforts but did not stop them. USAFE planners were still confident they could use their occupation rights to requisition property if they completed the actions prior to handing over full sovereignty to the West Germans, scheduled for 5 May 1955.[93] During 1954 and the beginning of 1955, USAFE performed 200 site surveys in Germany, selecting 37 DOBs, including three autobahn

90. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 144.
91. HQ USAFE, "USAFE Policy on Priority of the Interim Development of Dispersal Airfields and Facilities," 13 April 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II. History, United States Air Forces in Europe, 1 July - 31 December 1954, Volume I, 86.
92. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 143.
93. Lt General William H. Tunner to Chief of Staff USAF, letter, "CINCUSAFE Monthly Summary," May 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II. History, United States Air Forces in Europe, 1 July - 31 December 1954 Volume I, 87-88.

landing strips and 12 DPAs.[94] Construction started on 15 dispersal bases in West Germany with six near completion by mid-1955.[95]

The situation in France did not accommodate USAFE plans. Unlike in West Germany where Deutsche Mark occupation funds were available, USAFE needed dollars for any construction work to proceed in France. Unfortunately for the Americans planners, the US Air Force was not forthcoming with dollars for this project. Even if the Air Force allocated the funds, gaining French approval for access to existing bases and approval to build more bases within their country was a significant obstacle. To do so, SHAPE had to assign a base for USAFE use. Next, Headquarters, Air Force needed to recognize the requirement.[96] Then, the Department of Defense would request the State Department to enter negotiations with the Government of France. These negotiations would have to revise the established Air Base Agreement, followed by the Air Forces from the two nations concluding technical utilization agreements.[97] USAFE achieved little progress on this front during 1955. General Tunner acknowledged the difference between France and Germany bemoaning, "I have the capability of carrying out measures in West Germany but such a capability has not yet been provided in France." [98]

Twelfth Air Force conducted an exercise in 1955 to build on the findings from Exercise Vapor Trail the previous year. Exercise Vapor Trail II, held from 20 June to 15 September 1955 was longer in duration and involved more forces than its predecessor.[99] It aimed to develop the dispersal concept further, determine specific resource requirements, and obtain detailed data on an assortment of operational factors. Exercise Vapor Trail II included two wings from Twelfth Air Force, the 48th and 50th FBW. The method the wings used to deploy tested the two competing dispersal plans under discussion between USAFE and SHAPE during 1954 and 1955. The 48th dispersed with

94. United States Air Forces in Europe, "USAFE Dispersal Program," H-2.
95. Office of the Assistant for Aviation Engineers, DCS/Installations, Headquarters USAFE, 15 February 1955, in History, United States Air Forces In Europe, 1 July – 31 December 1954, Volume VI. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 167.
96. Hq USAFE to All Staff Agencies, Hq USAFE, memorandum, "USAFE Central Area Single-Squadron Dispersal Program," 9 August 1955, in History, United States Air Forces in Europe, 1 January – 31 December 1955, Volume II.
97. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 33-34.
98. United States Air Forces in Europe, "USAFE Dispersal Program," General Tunner Letter, A-18.
99. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 162.

each squadron on two bases while the 50th dispersed with each squadron on one base.[100] Both wings received their support from a single OSB located at Chaumont Air Base in France.[101]

A significant lesson from Exercise Vapor Trail II was the difficulty of operating one squadron from two separate airfields. The exercise showed dispersing squadrons to one airfield was feasible with only minor personnel and equipment additions, while dispersal to two airfields per squadron required a major increase of resources. Furthermore, the additional flexibility and dispersal gained from using an extra DLA for each squadron did not appear to justify the amount of overhead required or the loss of command and control that commanders experienced.[102] Exercise planners found one OSB sufficient to supply two wings. In addition, the planners gained a better appreciation for the need to pre-stock the OSB prior to hostilities and the importance of adequate airlift to move the supplies to the dispersed sites during hostilities.[103] The importance of pre-stock extended to the DOBs as well.[104] During the exercise, Airmen experienced difficulties moving supplies to the bases, and they expected that wartime would only make the difficulties worse.[105] General Tunner, addressing the NATO Defense College in Rome on the importance of airlift, stated, "Under wartime conditions roads would be jammed and blocked and rail centers damaged. Surface transportation would be at a standstill. Without air logistics our tactical air forces, too, would be at a standstill."[106]

At the beginning of 1956, one year after USAFE codified its dispersal policy, USAFE had made some progress towards its implementation. Even though planners continued to reduce dispersal requirements in light of practical considerations, they remained optimistic their command could make progress towards its goal. The USAFE Historians described the attitude at the start of 1956 by contending, "the actual dispersal capability of USAFE tactical units was by no means equal to that envisioned in the

100. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 79.
101. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 79.
102. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 162.
103. History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 162.
104. Brig Gen A. P. Clark to Commander Allied Air Forces Central Europe, letter, "Implementation of MC 60 (Dispersal)," 6 February 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II.
105. History, Twelfth Air Force, 1 January - 30 June 1956, Volume I, 82.
106. General William Tunner, CINCUSAFE, US Air Force (address, NATO Defense College, Paris France, 30 June 1955).

original concept . . .Nevertheless, significant efforts had been made in the Central and Northern Areas, and these efforts had not been wasted. . .New base utilization schedules had improved the postures of both the Twelfth and the Third Air Forces, and in spite of all current and anticipated difficulties, a certain amount of interim squadron-level dispersal in accordance with the existing SHAPE policy seemed possible within the coming year."[107]

The optimism of USAFE planners was not misplaced as 1956 proved to be a year of significant dispersal progress. Despite this progress, however, Airmen discovered events conspired to force them to reduce dispersal requirements further. Due to lack of funding and approvals for land access to establish OSBs in France and Spain, USAFE adjusted its interim dispersal plan. It modified the plan to provide support materials for the DOBs through the MOBs—the same MOBs USAFE planners felt were likely targets of Soviet initial attacks.[108] Officially, however, the construction and use of OSBs remained a USAFE long-term objective.

On the more positive side for USAFE planners, modest progress was achieved in France on securing additional bases to disperse. SHAPE tentatively assigned the United States nine French bases that had been reserved for NATO use. SHAPE also provided infrastructure funds for USAFE to improve the bases to its standards.[109] While these measures demonstrated progress towards dispersed basing, USAFE did not yet receive permanent access rights that they required to pre-stock ammunition. The United States and France did not reach a technical agreement until 7 November 1956 that allowed the US rights to store 60 days of pre-stocked equipment. This agreement further stipulated that American Airmen must provide permanent caretaking and guarding of the airfield.[110] Fortunately for USAFE, it appeared additional Airmen were inbound.

In August 1956, USAFE received authorization from the Air Force for an additional 670 people to serve in caretaker detachments at dispersed sites. However, the Air Force told USAFE staff not to expect them to fill these positions until March 1957.[111]

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107. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 28.
108. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 29.
109. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 29.
110. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 37; History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume III.
111. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 46.

Additionally, one of the findings from early exercises and planning was the need for increased airlift to keep the dispersed sites supplied and move equipment to rear area maintenance during a conflict. USAFE made advances in this area as well. USAFE's three wings of C-119 were increased by another group of C-123s and twelve more C-124s by August. [112]

The USAFE successes also extended to the area of communication, command, and control infrastructure. Twenty mobile control tower vans were fabricated in West Germany, sufficient to equip all DOBs. Additionally, USAFE procured ground controlled approach sets while it completed tactical air navigation beacons for 37 sites.[113] Furthermore, additional funds were applied toward the installation of a microwave network in Germany. Finally, 35 of the 61 microwave stations in France were in operation by the end of the year.[114]

Progress was not limited only to material gains. USAFE expanded training as well, to gain proficiency in the dispersal plan.[115] Twelfth Air Force exercised each of its squadrons by placing it in a dispersed posture at least once every six months through 1956. Squadrons were alerted without prior notice and deployed to dispersed operating and hideaway locations as quickly as possible for periods up to 48 hours. The Airmen conducted flight operations while at these locations that required them to move all their necessary supplies during dispersal.[116] By the end of 1956, USAFE made much progress in its dispersal plan, even if full funding for sites in France was still not approved. [117] Despite reasons for optimism, however, additional obstacles appeared in 1957.

The progress toward USAFE's vision of dispersed bases eventually hit some roadblocks in 1957. Through the first quarter of 1957 USAFE staff could claim the

112. USAFE briefing to General Twining, CSAF, 29 April 1955; History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 50.
113. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 52-53.
114. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 52-53.
115. Brig Gen A. P. Clark to Commander Allied Air Forces Central Europe, letter, "Implementation of MC 60 (Dispersal)," 6 February 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II.
116. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 54.
117. History. United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, 168.

dispersal program advanced at a satisfactory rate.[118] The project itself moved from USAFE's fourth priority goal in 1956 to second at the beginning of 1957. The USAFE Commander remained confident enough in its progress to insist the full dispersal plan—consisting of no more than eight aircraft at any one location—remained the official command policy. The obstinacy persisted despite continued SHAPE resistance and the results of Exercise Vapor Trail II, which stressed the difficulties of dispersing to such a degree.[119] In addition, the extra personnel to fill caretaker detachments arrived in greater numbers. In January, 14 caretaker detachments were stationed on DOBs in Germany and four were in place in France. The personnel consisted of 22 Officers, 367 airmen, and 39 workers from the local region.[120] Unknown to USAFE Airmen, significant changes to the dispersal plan would come throughout the year.

The Air Force initiated a downsizing program in 1957 in response to budget reductions President Eisenhower imposed on the Department of Defense and, in particular, on conventional forces stationed in Europe. The President feared large budget deficits would weaken the US and favored limiting spending on defense in favor of domestic priorities. His approach contributed to increasing US reliance on nuclear weapons for its defense instead of conventional forces.[121] Through its downsizing initiative, the Air Force aimed to reduce its total end strength from 137 Wings to 116 Wings by the end of 1961.[122] USAFE's 62 assigned squadrons would begin to drop in 1958 resulting in only 40 assigned squadrons and 12 rotational squadrons in 1960. The reductions would drive the consolidation of Twelfth Air Force and USAFE headquarters.[123] This reduction had significant impacts on USAFE's resources and ability

118. Brig Gen A. P. Clark to Commander Allied Air Forces Central Europe, letter, "Implementation of MC 60 (Dispersal)," 6 February 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II.
119. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 66; History, Twelfth Air Force, 1 July - 31 December 1956, Volume I.
120. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 47.
121. President Eisenhower's approach called "New Look" originated from a strategy study he ordered in 1953 called Solarium. See: Friedman, *The Fifty Year War*,193-195; Bernard C. Nalty, *Winged Shield, Winged Sword: A History of the United States Air Force* (Washington, DC: Air Force History and Museums Program, 1997), 134.
122. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 67.
123. Major General Herbert B. Thatcher Vice Commander USAFE to COFS USAF, electronically transmitted message, "Change in USAFE Force Deployment and Composition," 18 September 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II; General F. F. Everest CINCUSAFE to CINC European Command, letter, "Reduction in Number of Higher Headquarters," 26

to execute its dispersal program—even if there would be fewer squadrons to disperse. On 27 July 1957, the USAFE Vice Commander-in-Chief sent a memorandum to all staff agencies directing reductions in force and organizations. In-theater units faced 18 percent personnel reduction, one complete Fighter-Interceptor Wing was retired, and 10 DOBs in the Munich area were closed.[124] These changes restricted access to any more bases in France. By January of 1958, while USAFE's official position continued to work towards obtaining these bases, the USAFE History reported, "no reliable prediction could be made as to when the agreement would be signed." [125]

Due to these reductions, USAFE adjusted its official dispersal plan at the end of 1957 for the first time since it released the plan in January 1955.[126] USAFE planned to use only seven MOB and 14 DOB in France, six MOBs and 12 DOBs in Germany, and a single MOB in the Netherlands.[127] The OSB concept of 9 dispersed support bases in France and Spain was abandoned altogether. USAFE stated, "The cost of prestockage for a joint utilization of USAF bases in Spain . . . is beyond the feasible capabilities of this command under present budgetary and manpower limitations."[128] These changes slashed the 124 bases that USAFE identified as requirements in its January 1955 plan down to 40 total bases. During the year, the requirement for pre-stocked supplies to support combat operations after the beginning of hostilities was eliminated.[129] The USAFE History at the

September 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II; History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 67.

124. General F. F. Everest CINCUSAFE to Major General Richard J. O'Keefe Commander Seventeenth air force, letter, "Proposed Changes in USAFE Command Structure," 29 August 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II; History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 69, 80.

125. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 70-71.

126. Brig Gen Joseph R. Holzapple, Chief of Staff USAFE, memorandum, "USAFE Dispersal Concept for Tactical Forces," 11 December 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II..

127. Hq USAF to CINCUSAFE, electronically transmitted message, "Release pf excess Bases and Facilities in USAFE area," 20 December 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II; History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 71.

128. Brig Gen Joseph R. Holzapple Chief of Staff, CINCUSAFE to COFS USAF, electronically transmitted message, "Base Requirements in Spain," 15 November 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II.

129. General F. F. Everest CINCUSAFE to Major General Richard J. O'Keefe Commander Seventeenth air force, letter, "Proposed Changes in USAFE Command Structure," 29 August 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II; History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 81.

end of 1957 summarizes the state of affairs well: "The history of the USAFE dispersal concept . . . was one of continuous pragmatic adjustment to changing realities within the constant framework of a fixed ideal . . . Changing Force Tabs [personnel and aircraft levels], disappointing budgets, reduced warning times, and increasing enemy strike power necessitated an endless series of plan revisions and frequently cancelled efforts which otherwise might have brought progress."[130]

The change in the size of the force and reduced funding that came in 1957 marked the end of the USAFE dispersal plan as envisioned in the planning periods of 1954 and 1955, although a much more limited dispersal capability existed for the remainder of the Cold War. By the end of 1959, USAFE's posture consisted of 11 MOBs and four DOBs in the Central Area. USAFE dropped former DOBs from its dispersal concepts, and no wartime deployment or prestockage was programmed for dispersed sites.[131] By 1963, approximately ten years after the need for dispersal was recognized, planning included the use of 22 MOBs and 8 DOBs across all USAFE areas. These dispersed sites were an improvement over USAFE's posture ten years prior, but a far cry indeed from the original dispersal plan vision.[132]

Conclusion

USAFE pursued the stand-in approach as it strove to increase survivability while faced with the Soviet threat. Its planners increased survivability by dispersing forces to maintain its ability to deliver retaliatory strikes and blunt the advancing Soviet columns. Regardless of the obstacles confronting the dispersal plan, USAFE leaders maintained their focus and determination to remain in Europe, even in the face of overwhelming threats that could annihilate them. They did so because it was through their mere presence that the US achieved its strategic aims of assuring allies and enemy alike that they would defend Europe from aggression. In addition, its commitment allowed the US to increase its leadership in multinational organizations, mainly NATO, and enhance partner nation development—all benefits expected and summarized in Chapter 1.

130. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 95.
131. History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, 11.
132. History. United States Air Forces in Europe, 1 July – 31 December 1960, Volume I, 24.

USAFE leaders felt passionate about this mission. After a retired Major General pressed for USAFE to leave West Germany, General Tunner responded acerbically, "When a member of our forces proposes the same thing as our enemy, I believe one of them must be wrong in his thinking." [133] By seeking direct political benefit, the interests of the US to defend its allies and the interests of the host nations that required defense assistance in the face of the Soviet threat were aligned. The alignment of interests resulted in less concern over some disadvantages arising from operating in a host country, such as severely restricting operations. Limitations remained present, however. As the case study showed, France and Germany were reluctant to offer land for bases that USAFE felt it needed to perform its mission.

In addition to the political benefit, operational reasons also kept USAFE forces as close to the operational area as possible. USAFE operational plans required it to respond to Soviet initiative, whether in the sky or on the ground. The requirement to respond quickly placed pressure to reduce the time it took to respond to a dynamic target environment. Twelfth Air Force demonstrated the desire to base as close as possible with its preference of the Split Wing over a Rear Wing approach. Keeping their combat elements as far forward as possible achieved the required combat power through sortie generation. Also, during both Exercise Vapor Trail and Exercise Vapor Trail II, the success criteria were based, in part, on whether squadrons maintained sufficient sortie rates they would require during a Soviet attack.

The case study also reveals the monumental efforts USAFE planners undertook to pursue the stand-in approach. They wrote new operational concepts at multiple levels of command, coordinated new funding with Air Force Headquarters, established new personnel positions, developed new support equipment, pre-stocked supplies across the continent, and revamped their training programs, all to make the stand-in approach a reality.

USAFE never attained its envisioned dispersed posture, although commanders were not forced off of the continent from the Soviet threat. Regardless of whether they

133. Lt Gen William Tunner CINCUSAFE to Major General Grandison Garnder (ret) Advisor to SHAPE Air Defense Technical Center, letter, "Air Defense: Objections to Recommendations that USAFE Move Out of Germany." 31 May 1957, in History, United States Air Forces in Europe, 1 July - 31 December 1957, Volume II.

reached their greatest aims, commanders chose to “double-down” on their continental investment. These commanders were compelled to do so because their strategy for victory, a strategy that critically included the various political considerations of operating in a coalition, demanded it. As the next chapter will demonstrate, such considerations were absent for SAC, which was operating under a completely different set of requirements.

Chapter 5

SAC'S Stand-Off Approach

While United States Air Forces in Europe (USAFE) struggled to ensure its retaliatory strength could survive a Soviet attack, Strategic Air Command (SAC) wrestled with similar vital concerns under a different set of conditions. Unlike USAFE, SAC did not solely aim to increase its survivability from within the high-threat environment. It pursued greater long-range capability to operate from beyond the reach of its greatest threats. In other words, SAC pursued a stand-off approach.

Chapter 5 describes SAC efforts to initiate its changes while faced with great uncertainty of success. The purpose of this chapter is to identify why, given the uncertainty, Air Force leaders made the choices they did to increase long-range capability for the stand-off approach. The case study will show that SAC pursued this approach because it did not seek political benefit from presence in contested areas while it had a static target environment. Due to the static nature of its targets in comparison to its ability to react to incoming threats, SAC leaders saw lengthening sortie time and emphasizing large striking power per bomber wave as beneficial. Therefore, SAC achieved an advantage by increasing the range and time between it and the Soviet threat.

Background and Context

A little over one month after his Air Forces inaugurated the atomic age over Hiroshima and Nagasaki in August 1945, General Henry "Hap" Arnold convened a board of Generals on the organizational implications of the atomic bomb. What would later become known as "The Spaatz Board," led by Carl. A. Spaatz and including Lauris Norstad and Hoyt S. Vandenburg, determined how the atomic bomb would shape the size, organization, and composition of the Army Air Forces.[1] The Board members decided that due to the destructive power of this new weapon, the next war would begin with a surprise attack allowing no time for mobilization of forces as done prior to WWII. Therefore, the Armed Forces of the United States must be prepared to fight at a moment's

1. William S. Borgiaz, *The Strategic Air Command: Evolution and Consolidation of Nuclear Forces, 1945-1955* (London, UK: Praeger, 1996), 2, 3.

notice. To protect against an aggressor's surprise attack, the Board recommended the Army Air Forces organize and equip to provide atomic deterrence. Furthermore, deterrence would rely on the heavy bomber as the primary atomic delivery system.[2] The members of the Board recognized that to deter aggression the Army Air Forces required greater atomic striking force: more bombs, aircraft, and forward air bases than any potential adversary.[3] These foundational precepts led to the development of the SAC.

SAC formally came into existence 21 March 1946, but its *raison d'être* was evident decades earlier in the minds of the airpower theorists including Hugh Trenchard, Giulio Douhet, and William "Billy" Mitchell.[4] SAC's mission was to "be prepared to conduct long range offensive operations in any part of the world either independently or in cooperation with land and naval forces . . ."[5] SAC command and control followed the model of Twentieth Air Force during WWII, which was the only numbered air force commanded from Washington. Air commanders believed centralized command unlocked airpower's global flexibility to mass at the desired point. Therefore, the first Unified Command Plan in 1946 identified SAC as a specified command that reported directly to the Joint Chiefs of Staff.[6] The Command needed time to develop, which it did slowly while the entire US Air Force achieved service independence and experienced drastic post-war force reductions.[7] Only in 1948 did SAC's new commander, General Curtis E. LeMay, set the organization on the path towards true intercontinental offensive bombing capability.[8]

General LeMay, more than anyone else, shaped SAC's operations, capability, and basing approach.[9] He briefed US Air Force key leaders at a meeting at Maxwell Air

2. David R. Mets, *Master of Airpower: General Carl A. Spaatz* (Novato, CA: Presidio Press,1997), 314. Borgiaz, *The Strategic Air Command,* 2, 3.
3. Borgiaz, *The Strategic Air Command,* 3.
4. David A Anderton, *Strategic Air Command: Two-thirds of the Triad* (New York: Charles Scribner's Sons, 1976), 30.
5. J.C. Hopkins and Sheldon A. Goldberg, *The Development of Strategic Air Command 1946-1981* (Offutt Air Force Base, NE: Office of the Historian, Headquarters Strategic Air Command, 1986), 2.
6. Melvin G. Deaile, "The SAC Mentality: The Origins of Strategic Air Command's Organizational Culture, 1948-1951," *Air and Space Power Journal*, March-April 2015, 51.
7. Deaile, "The SAC Mentality," 57.
8. Borgiaz, *The Strategic Air Command,* xii.
9. Richard Kohn and Joseph P. Harahan, "U.S. Strategic Air Power, 1948-1962: Exerpts from an Interview with Generals Curtis E. LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton," *International Security* 12, No. 4 (Spring, 1988), 79.

Force Base on 6 December 1948, shortly after taking command. LeMay presented SAC's proposed war plan, Emergency War Plan (EWP) 149, which intended to "deliver the entire stockpile of atomic bombs . . . *in a single massive attack.* [emphasis added]"[10] He explained to the audience of generals that his attack would originate from overseas bases in England, North Africa, and Alaska to deliver 133 atomic bombs on seventy Soviet cities within thirty days.[11] LeMay believed the best air defense was a good air offense—one that was always prepared to fight.[12] In his mind, SAC's offensive action to destroy the enemy on the ground was the only method to ensure safety from attack. This mindset led him to believe "tactical" air operations, such as those conducted by USAFE, had only secondary importance, or worse, threatened SAC with a dangerous diversion of critical resources.[13]

SAC's operations relied heavily on overseas bases during its early years.[14] The command's history stated, "the overseas bases played a pre-eminent role in all planning and operational activity."[15] Its reliance on overseas bases grew as its total forces increased during its first decade. Figure 5 shows the percent of SAC bases located overseas from 1946 to 1973:

10. Fred Kaplan, *Wizards of Armageddon* (New York: Simon and Schuster, 1983), 44.
11. Mike Worden, *Rise of the Fighter Generals* (Maxwell AFB, AL: Air University Press, 1998), 79; Borgiaz, *The Strategic Air Command,* 13; Kaplan, *Wizards of Armageddon*, 44.
12. Gen Curtis E. LeMay, *Mission with LeMay: My Story* (Garden City, NY: Doubleday & Company, Inc., 1965), 436; Borgiaz, *The Strategic Air Command,* 127.
13. Worden, *Rise of the Fighter Generals*, 64; Borgiaz, *The Strategic Air Command,* 127.
14. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 184.
15. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 184.

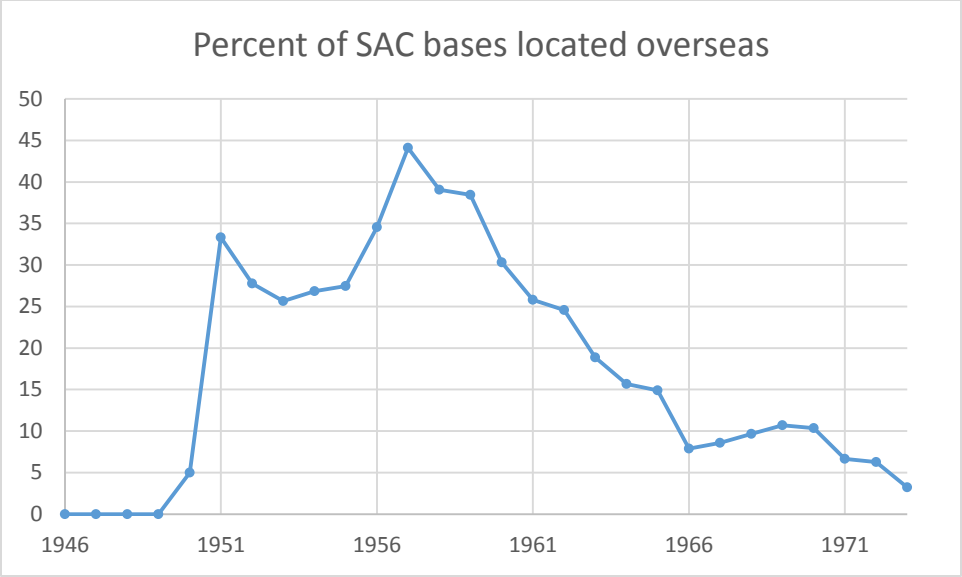

Figure 5 Percent of SAC bases located overseas

Source: Data from Norman Polmar and Timothy Laur, Strategic Air Command (Baltimore, BD: The Nautical & Aviation Publishing Company of America, 1990). Graph is Author's Original Work.

As demonstrated in the previous case studies, using bases positioned closer to the adversary reduced the time, distance, and fuel for aircraft to reach their targets. Additionally, overseas bases provided greater dispersal of the force. Dispersal complicated Soviet targeting and increased Soviet uncertainty on whether they could eliminate an appreciable portion of SAC forces in an initial strike.[16] Notwithstanding these benefits, SAC did not want to rely on overseas bases that were becoming increasingly vulnerable to Soviet attack.

Much like their USAFE counterparts in the early 1950s, senior US Air Force leaders responsible for strategic bombing worried about the growing Soviet threat. General LeMay's primary concern was protecting his aircraft at overseas bases from a surprise attack.[17] As early as June 1950, LeMay stated during an Air War College presentation, "We would be foolhardy to risk, on other than unavoidable emergency basis, the deployment to forward airdromes within range of enemy attack." [18] LeMay

16. Borgiaz, *The Strategic Air Command*, 131.
17. Borgiaz, *The Strategic Air Command*, 132.
18. Kaplan, *Wizards of Armageddon*, 93.

eventually wanted an intercontinental bomber force that would not require any overseas bases.[19]

American leaders' concerns about their strategic bombers became even more acute as they perceived an increase in Soviet capability and intention to initiate an attack. The CIA's first National Intelligence Estimate on Soviet Capabilities and Intentions, issued in 1950, stated, "The Soviet rulers may deliberately provoke such a war [with the West] at the time when, in their opinion, the relative strength of the USSR is at its maximum. It is estimated that such a period will exist from now through 1954, with a peak of Soviet strength relative to the Western powers being reached about 1952."[20]

In February 1950, a Joint Chiefs of Staff think tank, called the Weapons Systems Evaluation Group, documented in its first report the vulnerability of overseas bases in England. The group used an Operations Research approach to demonstrate mathematically that US base vulnerability could entice an adversary to gain an advantage by striking first. The think tank stated that at the beginning of a future conflict, the overseas bases may be "Pearl Harbored."[21] The growing awareness of senior US Air Force leaders of base vulnerability motivated them to ask the RAND Corporation, in May 1951, to perform a study on the selection of overseas strategic bases. RAND assigned Albert Wohlstetter to run the project. He and a team of three other researchers produced the report, "Selection and Use of Strategic Air Bases."[22] Wohlstetter's findings confirmed the original concern of US Air Force leaders that SAC was dangerously exposed to a surprise attack. Going further, he also showed the problem was more precarious than Air Force leaders even dared to consider.[23] Wohlstetter showed that one-third of the forward deployed aircraft were within Soviet lightweight bomber range, and Soviet medium bombers could reach all overseas SAC locations. Furthermore, he suggested to SAC that it parked all its aircraft in such proximity, to include all of their spare parts and repair equipment, that their complete destruction was possible with a limited number of

19. Kaplan, *Wizards of Armageddon*, 93.
20. Central Intelligence Agency, "Soviet Capabilities and Intentions," NIE-3, 15 November 1950, 1-2.
21. Weapon Systems Evaluation Group, "Evaluation of the Effectiveness of Strategic Air Operations," Study 1 in *Evaluating the Air Offensive: The WSEG 1 Study* (New York: Garland Publishing, 1990), K-61. Kaplan, *Wizards of Armageddon*, 93.
22. Borgiaz, *The Strategic Air Command*, 132.
23. Kaplan, *Wizards of Armageddon*, 97.

bombs.[24] Wohlstetter revealed that 120 bombs with an average miss distance of 4,000 feet could destroy 75 to 85 percent of all B-47s sitting at overseas bases.[25] SAC leaders did not have much choice other than to accept these risks and operate from overseas bases in its early years. The Command simply did not have enough bombers with sufficient range to operate any differently.

SAC's bombers had limited range in its early years. Its first primary bomber was the B-29 supplemented shortly after that by the B-50.[26] The B-29 had a brief operational life within SAC, despite the fact it was the technological marvel of airpower only a few short years before. The aircraft flew higher and farther than any previous operational bomber while its crew sat inside a pressurized cabin and operated machine gun turrets via remote control.[27] The B-29's reign as the epitome of strategic airpower aspirations would not last long due to advances in airframes and engines. By 1948, SAC accepted the first B-36 heavy bombers, the first bomber that had global range. For the first time aircraft operating out of Alaska could reach all Soviet targets although they required landing at post-strike support bases to refuel.[28]

Nevertheless, the B-36 did not provide SAC with sufficient capability to rely on exclusive operation from the US. As shown in Figure 6 the total quantity of B-36s was never that large compared to other bombers SAC operated—less than 10 percent. The operational capability of B-36s suffered as a result of limitations in aerial refueling capabilities. SAC accepted its first aerial refuelers, the KB-29, in 1949. As Figure 6 suggests, refueling tankers only existed in relatively small numbers, and they suffered from a host of capability limitations. Not until SAC accepted the jet-powered, medium-range B-47 in large numbers, combined with the development of the KC-97 that it had the capability to rely on operational plans that largely called for operating from the US. [29] Even with these capabilities, SAC's long-range striking capability was limited by the

24. Kaplan, *Wizards of Armageddon*, 98.
25. Kaplan, *Wizards of Armageddon*, 99.
26. The B-50 was a re-designed B-29 providing longer range, among other improvements.
27. National Museum of the Air Force, "Boeing B-29 Superfortress," http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=527.
28. Weapon Systems Evaluation Group, "Evaluation of the Effectiveness of Strategic Air Operations," Study 1 in *Evaluating the Air Offensive: The WSEG 1 Study*, 182.
29. Military Factory, "Boeing B-47 Stratojet," http://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=236.

quantity and limitations of the piston-engine tanker aircraft. After finding its bombing capability inhibited due to an inadequate tanker force, SAC planners lamented it was a case of the proverbial "Tail Wagging the Dog."[30]

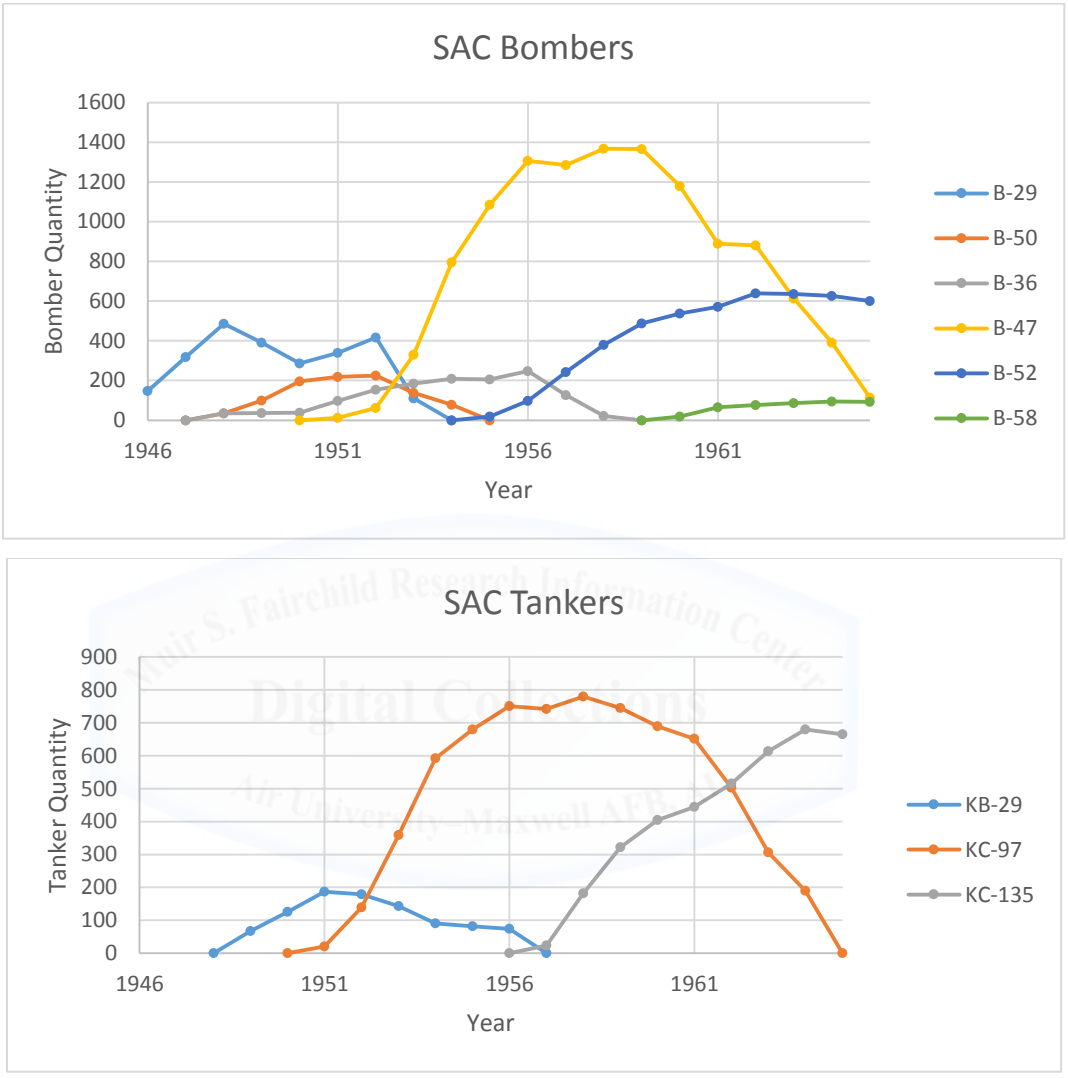

Figure 6: SAC Bomber and Tanker Force Levels (1946-1965)

Source: Total bombers by type from http://strategic-air-command.com/aircraft/bomber-graph/SAC%20Bomber%20Graph.htm; Total tankers from Hopkins and Goldberg, The Development of Strategic Air Command.

SAC's overseas presence swelled as the Command grew and matured, yet it lacked sufficient long-range bombers and tankers for intercontinental range. SAC expanded overseas bases from one in 1950 to 11 the following year.[31] To command its

30. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 221.
31. Polmar and Laur, *Strategic Air Command*.

increasingly distributed overseas forces, SAC created two new air divisions (AD). It established the 5th AD to lead operations in North Africa and the 7th AD to direct operations from England.[32] All of SAC's new bases were in England, North Africa, and Puerto Rico. Therefore, the expansion of bases coincided with the start of the Korean conflict (1950) but did not directly support air operations there. The Korean conflict provided evidence, in the eyes of Air Force leaders, however, of the Communist Bloc's willingness to challenge the West with possible war. For these leaders, the risk to Europe became more credible.[33] The quantity of overseas bases assigned to SAC does not precisely demonstrate the total number of bases it planned to use. SAC accepted the responsibility for some bases during the early 1950s that it had used as rotational bases since 1948.[34] SAC also operated from many bases belonging to other commands for its peacetime rotation program.[35] In addition, the EWP included additional bases SAC planned to use in war. Since the details of these plans regularly changed and largely remain classified, I use total bases assigned as an indicator of overseas dependence, not as an exact representation of base usage in the event of war.

SAC bombers in the early 1950s could reach significantly more targets in the Soviet Union when operating from overseas bases. The bases in North Africa, mainly French Morocco, were particularly beneficial. The North African bases enjoyed consistently good weather for flying, and they permitted bombing routes of only a few hours to Soviet targets. SAC eventually operated three bases in French Morocco: Sidi Slimane, Benguerir, and Nouasseur Air Bases.[36] By the middle of the decade, SAC operated two main bases and nine dispersed bases around the Mediterranean, in addition to 24 bases in England.[37] USAFE operated many of the Mediterranean bases that SAC planned to use for its EWP. These bases included Dhahran Air Base (Saudi Arabia); Wheelus Air Base (Libya); Athenia Air Base (Greece); and, Adana Air Base (Turkey).[38]

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32. Alwyn T. Lloyd, *A Cold War Legacy: A Tribute to Strategic Air Command 1946-1992* (Missoula, MT: Pictorial Histories Publishing Company, Inc., 2000), 177.
33. Lloyd, *A Cold War Legacy*, 177,681; Christoph Bluth, *Britain, Germany, and Western Nuclear Strategy* (Oxford, UK: Claredon Press, 1995) 13.
34. Polmar and Laur, *Strategic Air Command*, 25.
35. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 186.
36. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 189.
37. Borgiaz, *The Strategic Air Command*, 131.
38. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 189.

SAC did not control any bases on the European continent until late in the decade when it accepted a base in Spain. Overall, SAC considered the vulnerability of continental European bases to Soviet interdiction as too great.[39]

SAC's dependence on overseas bases located in foreign countries introduced a level of political vulnerability to its operations. By 1956, SAC leaders worried that growing nationalism and communism worldwide threatened all of its bases surrounding the Mediterranean and in the North Atlantic. In some areas, they feared political pressure would force them to abandon valuable locations. In others, they were more concerned that foreign governments could use their strategically valuable location to pressure the US to pay enormous costs to retain basing rights.[40] Both of these concerns are captured in SAC's two greatest political burdens: French Morocco and Iceland.[41]

French Morocco was a strategically important location for SAC. Therefore, the nationalist movement's pursuit of complete independence from France created political uncertainty that became worrisome to SAC leaders.[42] The US effort to establish bases in Morocco was politically fraught from its start in 1950 and 1951. The American's historical view of Morocco was that it maintained its sovereignty. US political leaders held this view even after France established Morocco as a protectorate in 1912.[43] The US diplomatically walked a narrow line by recognizing that Morocco was not a colony, yet it was part of the French colonial empire.[44]At the same time, the US did not want to aggravate its allies in Paris by recognizing this unique status too overtly. The American diplomats involved in negotiating for access to bases in Morocco debated whether they should include the Sultan of Morocco in the negotiation. As one writer has captured, American leaders asked the question, among others: "Did France's military authority extend beyond providing for the defense of Morocco and the maintenance of internal order? By what right could France grant a foreign power permission to build air bases on

39. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 187.
40. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 195.
41. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 194.
42. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 197-198.
43. Benjamin Rivilin, "The United States and Moroccan International Status, 1943-1956: A Contributory Factor in Morocco's Reassertion of Independence from France," *The International Journal of African Historical Studies* 15, no. 1 (1982): 70.
44. Rivlin, "The United States and Moroccan International Status," 69.

Moroccan soil . . .?"[45] Ultimately, the Americans decided the urgency to establish bases to counter the growing Soviet threat did not allow them to become entangled in a dispute over colonial rights. Therefore, US diplomats chose to negotiate only with the French.[46]

In 1954, Morocco was rocked with confrontations between nationalists and French authorities. Approximately 60,000 French troops stationed in the African nation quelled the unrest.[47] The French kept tight force limits on the total quantity of SAC Airmen stationed in the country at 7,400 personnel and would file complaints with the US Embassy if they perceived the US exceeded those levels.[48] These personnel restrictions limited SAC's ability to defend its bases, whose ultimate protection relied on the French military. SAC could only do as much as possible with its existing forces and hope the French protected them if the nationalists turned their attention to the American outposts. The Americans were concerned that an expansion of nationalist attacks may cause the French to divert forces to other areas, leaving the American installations without adequate protection.[49] The Americans tried to remain neutral in the internal dispute. They avoided alienating their French allies and protectors, however, indications increasingly looked like the French would not maintain control of the nation. American interests were not served by aligning too closely with the French government should the French not have the staying power to remain, which is, in fact, what happened.[50]

Morocco gained its independence in 1956 and entered negotiations with the American government on base access.[51] The Moroccans tested the importance of these bases to the Americans by demanding the US pay $450 million ($3.8 billion in 2015) each year in rent for four air bases, one naval air station, and a radar network. To say the two negotiating sides were far apart is an understatement. The Americans countered the Moroccan offer by insisting a fair rent was $10-15 million ($86-129 million in 2015).

45. Rivlin, "The United States and Moroccan International Status," 75.
46. Rivlin, "The United States and Moroccan International Status," 75.
47. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 198.
48. Chief of Staff, USAFE, "CINCUSAFE's Monthly Summary," August 1955, in History, United States Air Forces in Europe, 1 January - 31 December 1955, Volume II.
49. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 200.
50. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 201.
51. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 201-203.

Furthermore, American negotiators stated they would move to Libya or Spain rather than pay the rent Morocco suggested.[52]

The Americans may not have been able to abandon areas as easily as their negotiators suggested. Wherever the Americans lessened their presence, they worried Soviet influence would increase. A Soviet ally positioned to the southwest of Europe and controlling the mouth of the Mediterranean could be strategically dangerous. This concern sustained the American negotiations. Despite the tumultuous events in Northern Africa in the1950s, the Americans and Moroccan governments did reach an agreement that preserved American control of Moroccan bases until 1963.[53]

SAC leaders had similar concerns for the base they maintained in Iceland. In rather colorful language for an official unit history, SAC historians titled their chapter "Iceland: A Volcanic Island in Political Eruption."[54] Iceland's strategic value stemmed from its geographic position. Specifically, it sits in the path between the Norwegian Sea and the Atlantic Ocean.[55] American strategists at the time saw its location as a "choke point" that allowed Allied navies the ability to prevent Soviet access to the North Atlantic.[56] Second, Iceland offered a critical location for fighter interceptors which, aided by radar sites, provided the first line of defense from Soviet bombers flying over the North Pole.[57] In addition, the operational concept SAC employed later in the decade, described in detail below, benefited from using the Icelandic base to host air-refueling tankers. Similar to Morocco, other bases could take its place to perform some of these tasks. Specifically, the Americans could use bases in Greenland, Canada (Newfoundland), or the Azores for air defense and tanker support.[58] Nevertheless, the Americans feared increased Soviet influence in Iceland if they abandoned their position.

52. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 204.
53. Claudia Wright, "Journey to Marrakesh: US—Moroccan Security Relations," *International Security* 7, no. 4 (Spring, 1983), 168.
54. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 208.
55. Robert D. Fraser, "Iceland, Its Geopolitics and Issues—1950-1962," (War College Thesis, Maxwell AFB April 1962), 2.
56. Rodney Kennedy-Minott, *U.S. Regional Force Application: The Maritime Strategy and Its Effect on Nordic Stability* (Stanford, CA: Hoover Institute Press, 1988), 20.
57. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 208. Fraser, "Iceland, Its Geopolitics and Issues," 6.
58. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 20.

Most worrisome for the Americans was that Soviet control of Iceland would provide them with a staging area they could use to reach the United States.[59] The North Atlantic Council stated in 1956, "Iceland in enemy hands would represent a great threat to the security of the Atlantic area . . .it represents a key position for the defense of these countries against air attack for the safe convoying of supplies by sea, and for the movement of defensive fighter aircraft between North America and Europe."[60] American fears were founded on a number of worrisome indicators of increased Soviet influence in Iceland. For example, in terms of economic dependencies, communist countries were the largest customers for Icelandic fisherman and the Soviet Union provided the island with all of its gasoline. [61] In addition, there was growing communist influence in Iceland's domestic politics. In the mid-1950s, Iceland's communist party received approximately 15 percent of the total seats in parliament (the Althing) and its party president became a key leader. [62] Closer to home for SAC, however, over 100 known communists worked on the American base. As a result, base staff devised a plan to deny these communists access to the base in the event of hostilities.[63]

On 28 March 1956, the Icelandic Althing voted in favor of withdrawing US forces from Iceland, although it stated it continued to support NATO. Subsequently, they requested the North Atlantic Council to review whether US troops in their nation was necessary. The Council recommended the American forces remain. It acknowledged the strategic importance of the location and the repercussions to Iceland's security if the Americans withdrew. Undeterred by these recommendations, the government of Iceland made a formal request on 1 August 1956 for the United States to remove its forces.[64]

The Americans may have had to comply with Icelandic demands, demonstrating the precarious position of forces on foreign soil, were it not for the impact of intervening international events. Of these, the most important was the Hungarian Revolution.

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59. Fraser, "Iceland, Its Geopolitics and Issues," 7.
60. Fraser, "Iceland, Its Geopolitics and Issues," 6.
61. An agreement between Iceland and the Soviet Union in 1953 included a provision that no oil could be imported from another source. Fraser, *Iceland, Its Geopolitics and Issues*, 30. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 211-212.
62. Fraser, "Iceland, Its Geopolitics and Issues," 25. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 211-212.
63. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 211-212.
64. Fraser, "Iceland, Its Geopolitics and Issues," 25.

The Hungarian revolution peaked during 13 days from 23 October to 4 November 1956.[65] Ultimately, the revolt was repressed after a brutal Soviet intervention.[66] The United Nations official report on the "Problem of Hungary" estimated 2,500-3,000 Hungarians were killed in the fighting, giving Soviet Premier Nikita Khrushchev the name, "Butcher of Budapest."[67] The Icelandic public closely followed the events in Budapest, and Soviet actions changed domestic public perception significantly. On 8 November 1956, for example, students tore down the flag of the Soviet Legation in Reykjavik. The public outrage marked a sea change in the way Icelanders viewed international events. By 6 December, the US State Department announced that the Icelandic government had withdrawn its request for US troops to leave.[68] The United States continues to use bases in Iceland today.

During basing discussions in 1951, the preceding events were still in the future. However, even at that early date, SAC had concerns about base vulnerability due to operational and political threats. As already mentioned, the Air Force turned to the RAND Corporation, and to a team of researchers led by Albert Wohlstetter, in particular, to address this problem. Beyond quantifying the vulnerability of the bases, however, Wohlstetter's report "Selection and Use of Strategic Air Bases" recommended actions the Air Force should take to solve the vulnerability problem.

Wohlstetter estimated the consequence of a surprise attack to ascertain how SAC should select its air bases given this possibility.[69] He described the report as first, "an examination of the critical factors in strategic-base selection . . . second, an application of this analysis to the basing of the 1956-1961 bombing force."[70] He first identified SAC's expected force posture, numbers, and operational plans. SAC planned to have 1,600 B-

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65. Charles Gati, *Failed Illusions: Moscow, Washington, Budapest, and the 1956 Hungarian Revolt* (Stanford, CA: Stanford University Press, 2006), 12.
66. Gati, *Failed Illusions*, 22.
67. United Nations General Assembly, "Report on the Special Committee on the Problem of Hungary," A/3592, Official Records: Eleventh Session, Supplement No. 18 (New York, 1957), 68; Gati, *Failed Illusions*, 1.
68. Fraser, "Iceland, Its Geopolitics and Issues," 32.
69. Borgiaz, *The Strategic Air Command*, 132.
70. A.J. Wohlstetter, F.S. Hoffman, R.J. Lutz, and H.S. Rowen, *The Selection and Use of Strategic Air Bases*, RAND Report R-266 (Washington, DC: RAND, April 1954), vii.
It is interesting to highlight that the period under study was a mere four to nine years in the future. This example is in stark contrast to some reports generated today that attempt to establish threat and capability trends extending multiple decades in the future.

47s, 300 B-36s, approximately 50 B-52s, and 720 KC-97s during the period Wohlstetter studied.[71] In retrospect, SAC never reached the estimated peak of B-47s and B-36s, although, it brought the B-52 on-line quicker than Wohlstetter's report estimated. SAC reached 243 B-52s in 1957 and 571 by the end of Wohlstetter's evaluation period.[72] SAC's operational plan stated that in the event of war SAC bombers would fly from 30 US bases to approximately 70 overseas bases. The bombers would conduct operations against the Soviet Union from there.[73] Furthermore, Wohlstetter found that moving forces into position would take about a week prior to starting operations.[74]

Wohlstetter evaluated four basing options to determine which approach maximized striking power given a fixed budget.[75] The first approach consisted of "bombers based on advanced overseas operating bases in time of war."[76] This approach most approximated SAC's plan at the time Wohlstetter performed his study. The second basing approach included, "bombers based on intermediate overseas operating bases in wartime."[77] The intermediate approach relied on bases further away from the Soviet Union than the forward air bases but not ones based in the United States. For example, this option included using bases in Newfoundland or Labrador.[78] The next two approaches operated bombers from the US, but the means to provide them fuel on the way to their targets differed. The third approach relied only on air-refueling, whereas, the fourth approach called for US-based bombers to reach their targets, "with the help of ground-refueling at overseas staging areas."[79]

Wohlstetter concluded that overseas operating bases, like those in the first approach, were simply too vulnerable to enemy attack. He found the second approach using intermediate bases too vulnerable as well. Bases that fell into these categories were not far enough from the threat to provide time to take adequate protective measures. Additionally, he concluded the passive and active defensive measures provided some

71. Kaplan, *Wizards of Armageddon*, 98.
72. Strategic-Air-Command.com, "SAC's Bomber Fleet," http://strategic-air-command.com/aircraft/bomber-graph/SAC%20Bomber%20Graph.htm (accessed April 2015).
73. Wohlstetter, *The Selection and Use of Strategic Air Bases,* x. Kaplan, *Wizards of Armageddon*, 89, 98.
74. Kaplan, *Wizards of Armageddon*, 98.
75. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* viii.
76. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* 353.
77. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* 353.
78. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* 353.
79. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* vi.

protection but, "the comparative vulnerability increases sharply as offensive weapons of higher performance and greater numbers are assumed to be committed by the enemy to these targets."[80] In essence, he argued SAC should expect the Soviet Union to overwhelm any defensive measure SAC employed. These conclusions left only the third and fourth options, both operated from the US.

Wohlstetter concluded that using overseas refueling bases reduced vulnerability compared to using overseas operating bases and maximized striking power compared to an air-refueling only approach. He stated that relying on only air-refueling, as proposed in the third option, was so expensive it reduced funds that could otherwise be used to procure additional striking power. He stated, "It would be exorbitant to abandon overseas bases to solve the overseas-base vulnerability problem."[81] Wohlstetter demonstrated that extending range by using air-refueling alone would grow costs exponentially. He calculated that using air-refueling to increase the range of a B-47 from 1,750 miles to 3,600 miles tripled the cost of the sortie. Further, costs grew faster as range is extended even more. Wohlstetter found if he increased the range to 5,200 miles, the cost of the mission increased by a factor of 10.[82] His findings did not only apply to extending range through air-refueling.

Wohlstetter had the same cost concerns for increasing the un-refueled range of bombers. First, he observed, "as our radius of operation increases, the cost to buy and operate our bombing force rises, and its effectiveness declines." [83] He noticed, once again, that the cost of extending the un-refueled range of bombers did not increase linearly but exponentially: "The cost to operate bombers big enough to reach targets without refueling increases at an accelerating rate with distances from base to target." [84] As the USAF built larger aircraft, other costs would grow as well. Such aircraft would need longer runways, more fuel, additional storage, and greater manpower.[85] He concluded the cost of air-refueling or extending the unrefueled range of bombers, "indicates the desirability of operating from bases which are as close as possible to these

80. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* vii-viii.
81. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* ix.
82. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xiv.
83. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xiii.
84. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xiii.
85. Kaplan, *Wizards of Armageddon,* 90.

targets."[86] Of course, this desire to get closer is tempered by the threat the enemy possesses. Wohlstetter observed, "the easier it is for us to hit them, the easier it is for them to hit us," although he felt SAC could manage this vulnerability by limiting the time bombers spent at any one overseas base.[87] Ultimately, these considerations led him to recommend a version of the fourth approach.

Wohlstetter pointed out that operating a wing from overseas during peacetime can cost up to 50 percent more than operations from the United States.[88] He captured this idea by identifying two different types of costs that were related to the geographic position of a base. The first was locality costs that contain factors such as, "weather, terrain, availability of construction, etc."[89] The specific location where a base was located drove locality costs. To illuminate his point, Wohlstetter offered the example of establishing a base in the Arctic where poor weather and limited local industry increased base construction and support costs. The second type of costs were location costs that depended on the routes from the United States to the overseas bases and the routes from the bases to targets. Location costs included enemy threats to the base, the flight route, and the ensuing defenses these threats required.[90] Wohlstetter's evaluation of location costs became important for his conclusions. Basing approaches that relied only on air-refueling had most of its budget allocated to purchasing tankers, while approaches that relied on overseas operational bases had most of its budget allocated to logistics support, defenses, and the costs incurred from bombers getting destroyed on the ground.[91] Wohlstetter arrived at his preferred approach because it could procure more bombers compared to other options.

Wohlstetter's preferred approach used operating bases in the US with overseas refueling bases.[92] This approach still relied on air-refueling, but not to the extent of the exclusive air-refueling option.[93] Wohlstetter decided that the refueling bases were not as vulnerable as full operating bases. Reduction in vulnerability came from aircraft

86. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xvi.
87. Kaplan, *Wizards of Armageddon*, 92.
88. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xx
89. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xii.
90. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xii.
91. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xxxviii.
92. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* vi.
93. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* vi.

remaining on the ground for only limited durations, and less support infrastructure compared to full operating bases. Also, refueling bases did not require much new construction. The minuscule construction requirements allowed SAC to build many more bases. As identified in the USAFE case study, many more bases created uncertainty for the Soviets as they would not know which bases aircraft would use. In addition, pilots could change their refueling base while in flight to adjust for changing conditions.[94]

Wohlstetter recognized that while the focus of his study was bomber striking power, SAC programmed 10 wings of fighters for 1956. Regardless of how SAC used these fighters, whether as bombers, escorts, or decoys, they further exacerbated the problem he found with the exclusive air-refueling approach. He discovered the severe limitations that come from procuring and operating a tanker force large enough to support all of the refueling requirements. He concluded SAC needed to forward deploy fighters at overseas bases and accept the vulnerability, or they required operating originally from the United States and using overseas refueling bases.[95]

Wohlstetter also concluded that his preferred approach alleviated political concerns. He stated, "Political factors in overseas areas restrict the availability of air bases and the conditions of their use."[96] Therefore, "Uncertainties of political alignment may make it necessary to distribute the bases among many distinct political entities."[97] His preferred basing approach supported the need to distribute bases. It was easier for SAC to obtain many dispersed bases if planners limited the bases only function to aircraft refueling as opposed to serving as a fully operational base. The increased ease came from the great reduction of supply, defense, and manning requirements compared to the alternative.[98] Moreover, having the ability to move bases easily puts the US in a stronger negotiating position. If the host country did not offer terms acceptable to the US, it could theoretically relocate its refueling bases to another country.

Wohlstetter acknowledged that operating from the US created longer sortie durations compared to operating from overseas bases. Consequently, sortie rates

94. Borgiaz, *The Strategic Air Command*, 132.
95. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xii.
96. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xi.
97. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xi.
98. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xi.

decreased as well. He was not concerned with sortie rate, however. This point is important for his conclusion. A different view on the importance of sortie rates could certainly change the recommended basing approach. Wohlstetter wrote, "the importance of high sortie rates for a World War III atomic campaign . . .is much less than for campaigns with high explosives, of the World War II type, in which damage had to be administered cumulatively, a little at a time, and from which recuperation was relatively rapid."[99] Wohlstetter viewed the problem as maximizing the number of bombers in the fewest bombing waves. This approach was consistent with SAC's strategy as captured in the LeMay's statements at the start of this chapter. Wohlstetter traded away greater sortie rate per bomber for greater striking power per attack wave. Although Wohlstetter did not explicitly state it, he implied that for a non-nuclear exchange, increasing sortie generation may become most important resulting in a change of the preferred basing approach.

After Wohlstetter and his team completed their study they commenced an exhaustive briefing campaign to disseminate their findings.[100] Three principal briefing recipients included Deputy Commander of SAC, General Tommy Powers, senior leaders on the Air Staff, and an Ad Hoc Committee established to evaluate their findings.[101] The Ad Hoc Committee was tasked to reach consensus on the study's findings and develop recommendations to present to the Air Force Council. Considerable delays occurred, however, as members of the Committee disagreed with the findings and refused to provide agreement necessary to proceed.[102] Because of these delays, RAND analysts secured a meeting with General Thomas White, the acting Air Force Chief of Staff, to attempt to break the stalemate on Air Staff. Wohlstetter's presentation to White convinced the acting Chief of the study's importance. General White promised to ensure the Air Force Council placed it on their agenda.[103]

With the weight of the Chief of Staff behind the plan, the Ad Hoc Committee finally briefed their recommendations. A little over two months later, in October 1953, the Council made its recommendation to General White and Acting Secretary of the Air

99. Wohlstetter et al., *The Selection and Use of Strategic Air Bases,* xxxix.
100. Robert Zarate and Henry Sokolski ed, *Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter* (Carlisle, PA: United States Army War College Press, 2009), 15.
101. Kaplan, *Wizards of Armageddon,*102-104.
102. Kaplan, *Wizards of Armageddon,* 104.
103. Kaplan, *Wizards of Armageddon,* 105.

Force, Jim Douglas. The Council's recommendations agreed with the Wohlstetter Report. They recommended: all Air Staff planning actions recognize the vulnerability of Air Force facilities; all facilities initiate a program to harden infrastructure to atomic attack to include a rapid airfield repair capability; USAF commands construct new advanced bases to allow rapid ground refueling; and the USAF reduce material resources in overseas areas to the minimum extent possible. General White and Secretary Douglas approved the council's recommendation shortly thereafter.[104] However, even with senior leader approval, the real test of the basing plan's feasibility lay in SAC's response.

LeMay appreciated the contribution of civilian researchers and he has even been called the "Godfather of RAND" due to his involvement in its development prior to assuming command of SAC. He understood, however, that producing results rested with the Commander. He and his staff, and no other, developed SAC's operational plans.[105]

Shortly after Air Force leaders approved the Air Council's recommendations, SAC developed an operational concept called Fullhouse. Fullhouse encompassed many of Wohlstetter's conclusions, although it never fully adopted Wohlstetter's preferred plan. Most importantly, SAC accepted the conclusion that it should conduct operations from the United States. However, Fullhouse relied much more on air-refueling than recommended in the RAND report. Fullhouse called for striking the Soviet Union using bombers based in the United States. The bombers proceeded non-stop to their assigned EWP targets by receiving fuel from KC-97 tankers operating from bases in Canada or islands in the Atlantic.[106] After the strike, the bombers recovered to post-strike bases where they were either re-fueled for a return trip to the United States or readied for additional attacks from that location.[107] Fullhouse significantly reduced the role of overseas Air Divisions and bases. Consequently, many of these bases converted from hosting permanent bombing wings to providing only post-strike support.[108] SAC's change in overseas base priority reduced the number of bases in the UK that SAC

104. Kaplan, *Wizards of Armageddon*, 105.
105. Col Phillip S. Meilinger, "How LeMay Transformed Strategic Air Command," *Air and Space Power Journal*, (March-April 2014): 83.
106. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 230.
107. Borgiaz, *The Strategic Air Command*, 134.
108. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 230.

planned to use in wartime from 27 to 17.[109] The goal, similar to the Wohlstetter report, was for SAC aircraft to remain on the ground at overseas locations for the shortest duration possible.[110] The concept was presented to the Air Council on 22 April 1954 and was included in SAC Operations plans only a week later on 1 May 1954.[111]

The Fullhouse concept aimed for a truly intercontinental force operating from the United States, however, SAC did not yet possess the capability to realize its vision. Just as Wohlstetter predicted, heavily relying on air-refueling restricted the striking power that SAC could deliver. To solve this limitation, SAC kept forces on rotational duty at overseas bases, instead of only hosting refueling bases as Wohlstetter recommended. Full B-47 and KC-97 wings periodically deployed to bases, primarily in North Africa and England, for periods of up to 90 days.[112] The Fullhouse concept required these forces to conduct strikes immediately after hostilities began while the U.S-based bombers proceeded to their targets.[113] As a result, Fullhouse relied on a combination of the two most expensive approaches from the Wohlstetter report. It used air-refueling more than the report suggested and also relied on vulnerable and expensive overseas operating bases to a larger degree. Wohlstetter rejected both of these approaches because they constrained the ability to procure more bombers. SAC's response to this argument was that the Air Force should simply allocate more funding for improved SAC capabilities.[114] Despite increased costs and the possible reduction in total strike capability, SAC remained committed to developing the means to strike targets non-stop from the US. It had several reasons for keeping such a high emphasis on the air-refueled approach, despite the recommendations of the RAND report.

The first reason for SAC to commit to developing a true intercontinental approach was the growing power and quantities of Soviet weapons. The introduction of thermonuclear weapons, the hydrogen bomb or "H-bomb," made all overseas bases vulnerable to destruction in a way Wohlstetter did not incorporate in his report. Wohlstetter determined the survivability of forward bases using atomic weapons with

109. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 273.
110. Borgiaz, *The Strategic Air Command*, 134.
111. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 230-231.
112. Polmar and Laur, *Strategic Air Command,* 40.
113. Borgiaz, *The Strategic Air Command*, 134.
114. Kaplan, *Wizards of Armageddon,*107.

maximum yields near a few hundred kilotons.[115] However, the Soviet Union demonstrated a multi-megaton H-Bomb by 1955. By 1961, the end of Wohlstetter's report period, the Soviet Union tested the largest nuclear weapon ever detonated—50 mega-tons.[116] No base could survive these weapons even if the delivery vehicle missed by a large margin. The newly realized explosive yields modified SAC perceptions of the survivability of its overseas bases, even if it only used them for re-fueling.

Largely because of the increased vulnerability of overseas bases, LeMay was committed to achieving a truly intercontinental force, what SAC called, "intercontinentalism."[117] Fullhouse was just a first step toward achieving the end goal. Therefore, it needed to be a step in the correct direction. Promoting Wohlstetter's ground refuel option competed with LeMay's interest of bringing on line the B-52 and KC-135 necessary for SAC to achieve his goals.[118] SAC argued strongly for these two new critical capabilities.

The SAC official history from 1956 left no mistake of the command's position that they must procure additional long-range capabilities as quickly as possible. The authors wrote as if they were making a plea directly to Congress, and maybe they were. Emphasizing with all capital letters used in section headings the report read, "THE CRITICAL NEED FOR A TRUE INTERCONTINENTAL CAPABILITY: The ideal answer to the command's dilemma . . ."[119] Taking the opportunity to argue for increased long-range capability, while at the same time landing a soft jab on their Army and Navy counterparts the authors wrote: "The development of the KC-135 jet tanker and B-52 force was of special urgency, yet by the end of June 1956 not one jet tanker had been delivered . . . and it possessed only a mere 35 B-52s. Naval and military bases overseas were becoming as vulnerable as air bases. But, unlike the Air Force, the Army and Navy could not withdraw their forces without practically abandoning their capability in overseas areas."[120] General Frederick Smith, from SAC's Requirements Division,

115. Kaplan, *Wizards of Armageddon*,106.
116. Frank von Hipple, *Russian Strategic Nuclear Forces* (Cambridge, MA: MIT Press, 2004), 3, 444. The yield was reduced in half for the test resulting in a 50 megaton detonation. The actual nominal yield of the device was 100 megatons.
117. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 228.
118. Kaplan, *Wizards of Armageddon*, 106.
119. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 227.
120. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 177.

supported this claim asserting that increased Soviet threat made all bases within two thousand miles of the Soviet Union vulnerable. Thus, the Air Force required "planes with greater range and speed."[121] Even during General LeMay's "earnest pleas" for increased production of the KC-135 and B-52, SAC stated these aircraft were not *true* intercontinental capabilities.[122] The danger of the capability shortfall in the eyes of SAC would exist until a follow-on to the B-52 could be developed, or the "operational Intercontinental Ballistics [sic] Missile could be brought into the force."[123]

In the Fullhouse concept, US-based bombers flew two different routes to their EWP targets. Following the first route, bombers proceeded from their bases in the US and headed toward North East Air Command on the east coast. There, they rendezvoused with KC-97 tankers operating out of US and Canadian bases.[124] The second route allowed bombers located in the south-east of the US to proceed across the middle of the Atlantic.[125] This route was longer and required three air refuelings to reach EWP targets instead of only one air-refueling required for the northern route.[126] However, it required less base construction and provided an alternative option should the northern route become un-usable.

In 1954, SAC tested the Fullhouse concept and flight routes. In February 1954, SAC conducted Operation High Gear to test the mid-Atlantic route.[127] Later in the year, SAC rehearsed the northern route in Operation Fullhouse, the largest simulated bombing mission originating from the United States up to that time. On 11 May 1954, Exercise Fullhouse launched three B-47 wings to simulated targets. The bomber formations were supported en route by five air refueling squadrons. Following the simulated strike they recovered in the United Kingdom for post-strike support.[128] The last related exercise in 1954, Operation Leap Frog, occurred three months later. The operation directed the 308th and 2nd Bomb Wing (BW) to depart their bases in the United States and proceed directly

121. Borgiaz, *The Strategic Air Command*, 100.
122. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 178.
123. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 178, 228.
124. Borgiaz, The Strategic Air Command, 134.
125. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 174.
126. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 234.
127. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 234.
128. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 233.

to simulated EWP targets followed by recovering at North African bases. [129] The 2nd BW stayed in North Africa to begin its 45-day rotational deployment while the 308th refueled and returned to their base in the United States.[130]

Operation Leap Frog contained another more ambitious task. As part of the larger deployment, the plan called for two bombers to return non-stop to the United States after their simulated strikes. These flights were the first attempt to cross the Atlantic on simulated bombing missions and return to the United States without landing, showcasing the full intercontinental capability SAC aimed to develop.[131] The operational order for Leap Frog directed each wing to provide one primary aircraft along with one airborne spare. The Airmen found that requiring airborne spares was a prudent decision. After the simulated strike, both crews from the 2nd BW aborted the return flight. Thus, the airborne spare from the 308th filled in, as per the plan, which resulted in two 308th BW aircraft completing the operation.[132] The total flight time was just over 24 hours for one crew and 25 hours and 40 minutes for the other crew.[133] The 308th was rightfully proud of their achievement, claiming they demonstrated, "the highest degree of proficiency and training."[134] Notwithstanding the 308th's accomplishment, having both the primary and spare from the 2nd BW abort—demonstrating a 50 percent success rate—revealed some of SAC's challenges conducting large-scale non-stop intercontinental bombing.

SAC's movement of forces from overseas bases to the US necessitated a significant base construction program. From 1954 to 1956, SAC built six additional bases, three of which were in the northern US, with access to bases in Canada under negotiation.[135] The Air Force subsequently authorized $25.7 million ($223.28 million in 2015) for these new construction requirements.[136] SAC also needed to improve bases to accommodate new aircraft. Larger jet aircraft, as Wohlstetter predicted, drove additional

129. Loyld *A Cold War Legacy*, 200.
130. History, 308 Bombardment Wing, August 1954, 3.
131. History, 308 Bombardment Wing, August 1954, 3, 13.
132. History, 308 Bombardment Wing, August 1954, 14-15.
133. History, 308 Bombardment Wing, August 1954, 14-15.
134. History, 308 Bombardment Wing, August 1954, 15.
135. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 175
136. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 237. Inflation adjustment using Bureau of Labor Statistics, Department of Labor, CPI Calculator http://www.bls.gov/data/inflation_calculator.htm

support costs. These costs included runway widening, extension, and the construction of added facilities to support the new aircraft.[137]

The growth of the Soviet Union's long-range capabilities increased the vulnerability of forces stationed in the United States. In 1955 and 1956 the American intelligence community began warning that the Soviets were building long-range bombers such as the Myasishchev M-4 Molot (NATO designation: Bison) and Tupolev Tu-95 (NATO designation: Bear) at a faster rate than the Americans could develop the B-52. Air Force intelligence projected the Soviet Union would have 600-700 strategic bombers by mid-1959. Evidence from the first U-2 reconnaissance flights dispelled the inflated estimates. By the 1958 NIE Soviet bomber estimates were reduced by three-quarters.[138] Regardless of the non-existent "bomber gap," Air Force leaders saw US bases as increasingly vulnerable, with no place else to escape. SAC attempted to improve US base survivability by employing additional dispersal of its aircraft and establishing an alert program. For dispersal, SAC intended on avoiding ever having more than one B-47 wing located on any one base while admitting that achieving "maximum dispersal" was very expensive. Despite the expense, SAC contemplated positioning B-52s in the United States so that no greater than one squadron was stationed any base.[139]

The other action SAC took due to the increased vulnerability of its forces in the US was to put bombers on alert. The alert concept consisted of aircraft and crews maintaining readiness to take off on combat missions within 15 minutes of getting called. The first demonstration took place in Operation Try Out, with two B-47 wings and two KC-97 wings at Hunter AFB, Georgia, from November 1956 through March 1957.[140] SAC performed a series of additional tests of the alert concept during 1957. General Powers, then SAC Commander, ordered the alert concept to become operational at several US and overseas bases starting 1 October 1957.[141] SAC achieved its goal of

137. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 178-179, 356.
138. Lawrence Freedman, *U.S. Intelligence and the Soviet Strategic Threat* (Princeton, NY: Princeton University Press, 2014), 66-67.
139. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 355-356.
140. Hopkins and Goldberg, The Development of Strategic Air Command, 65.
141. Hopkins and Goldberg, The Development *of Strategic Air Command*, 65.

keeping one-third of its bombers and tankers on 15-minute alert 24-hours a day by May 1960 followed by 50 percent of its force on alert by July 1961.[142]

SAC strove to increase the alert status of overseas units as well. They initiated a new rotational plan, called Reflex Action, to achieve the necessary alert status. Reflex Action wings rotated overseas for only three weeks at a time, as opposed to deploying for multiple months, as SAC required under the previous rotation policy. During those three weeks, each aircraft remained on full alert for one complete week.[143] SAC found Reflex Action to be more effective at maintaining nuclear deterrent and increased aircraft survivability should the Soviets launch a surprise attack.[144] SAC sent five B-47s to Sidi Slimane Air Base Morocco in the summer of 1957 to experiment with this concept. On 1 October, the same day SAC operationalized its alert plan in the United States, the bombers in Morocco began sitting alert for real-world Reflex Action operations. [145] The program proved so successful that by January 1958 SAC expanded it to bases in the UK and Alaska.[146] This success allowed SAC to discontinue the former 90-day rotation program by later in the year, a program SAC had relied on since first experimenting with the Fullhouse concept in 1953 and 1954.[147]

The true intercontinental strike capability SAC strived for came on line at the end of the 1950s in the form of missiles. On 29 November 1957, General Thomas White, Chief of Staff of the Air Force, announced ICBMs would be assigned to SAC. Two weeks later, SAC activated the 556th Strategic Missile Squadron to operate the world's first operational guided missile with intercontinental range.[148] The missile used by this squadron, the Northrop SM-62 Snark, was a ground-launched, sub-sonic cruise missile.[149] Its first test launch was 31 October 1957, and the first operational missiles arrived at units

142. Frederick J. Shaw Jr. and Timothy Warnock, *The Cold War and Beyond: Chronology of the United States Air Force 1947-1997* Maxwell, AFB, AL: Air University Press, 1997) 26, 29.
143. Cees Steijer, *History of USAFE* (Ramsbury, UK: Airlife Publishing Ltd., 1991), 85.
144. Hopkins and Goldberg, *The Development of Strategic Air Command*, 66.
145. Hopkins and Goldberg, *The Development of Strategic Air Command*, 66.
146. William E Pinter, "Concentrating on Dispersal Operations: Answering the Emerging Anti-Access Challenge in the Pacific Rim," Master's Thesis, School of Advanced Air and Space Studies, June 2003, 76.
147. Hopkins and Goldberg, *The Development of Strategic Air Command*, 74.
148. Shaw. and Warnock, *The Cold War and Beyond*, 22.
149. Glenn Infield, "Out of School and Into Action: Our First Guided Missileaires," *Popular Mechanics*, July 1958, 123.

in 1959.[150] Snark had a range in excess of 5,000 miles, which enabled it to reach all of the Soviet Union from Alaska.[151] Range, of course, is not the only factor that matters. Its relatively slow speed, altitude, and guidance problems made Snark an obsolete technology compared to what promised to come next. Even as Snark took its place as an operational weapon, it was already recognized as only an interim capability prior to operational ICBMs.[152]

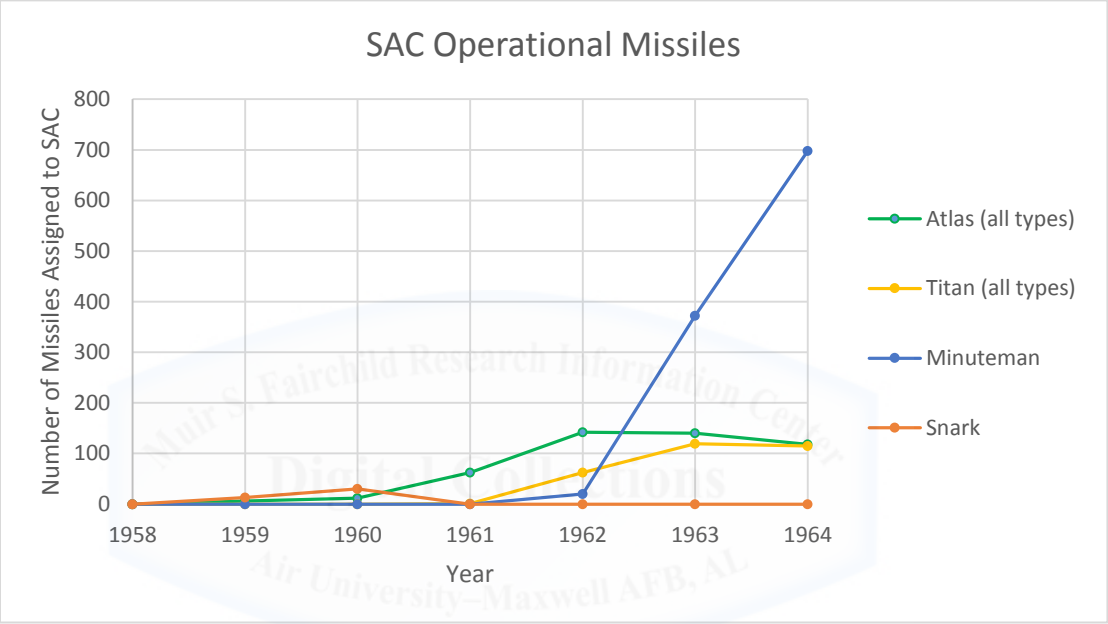

Figure 7: SAC Operational Missiles

Source: Data from: Hopkins and Goldberg, The Development of Strategic Air Command. Graph is Author's Original Work.

The first operational ICBM was the Atlas, which the USAF assigned to SAC in 1959.[153] SAC declared the first ICBM unit operational 2 September 1960.[154] By 1960, the US Air Force regularly performed Atlas test launches of greater than 9,000 miles while it

150. Glenn, "Out of School," 124. Hopkins and Goldberg, *The Development of Strategic Air Command*, 78.
151. Glenn, "Out of School," 122.
152. Glenn, "Out of School," 208.
153. Polmar and Lauer, *Strategic Air Command*, 299; Hopkins and Goldberg, *The Development of Strategic Air Command*.
154. The Official web site of the U.S. Air Force, "History Milestones," http://archive.today/dIMz#selection-516.2-579.121 (accessed 24 March 2015).

had an effective operational range of approximately 7,500 miles. [155] Atlas was followed shortly after by Titan, then Titan II, the largest ICBM the US ever developed.[156] The next ICBM the Air Force developed was the solid-fueled Minuteman that became the mainstay of SAC nuclear ICBM deterrence for decades. Figure 7 shows the increase in missiles assigned to SAC from 1958 to 1964 as SAC gained the true intercontinental capabilities it pursued. On 21 April 1964 the total ICBMs on alert surpassed the number of bombers on alert, a numerical superiority that became greater as the Cold War continued.[157]

The Air Force and CIA estimated that Soviet ICBM capability was expanding much quicker than it was. As with the so-called "bomber gap," the inflated intelligence estimates contributed to a perceived "missile gap" that went uncorrected until 1961. In December 1957, the CIA estimated the Soviet Union would have 100 deployed ICBMs in 1959 and 500 by mid-1961. When the faulty estimates were corrected, the Soviet Union had only four ICBMs compared to over 60 deployed by the US. Air Force estimates of Soviet missile numbers were equally poor. In 1960, the Air Force estimated the Soviets would have 950 ICBMs deployed by 1964 followed by 1,150 by mid-1965. In reality, the Soviet Union had no more than 209 operational missiles from 1963-1965. [158]

Notwithstanding the intelligence errors, the perceived Soviet ICBM threat caused the Air Force to view its forces as even more vulnerable. The SAC history written at the end of 1956 explained, "In the era of the Intercontinental Ballistics [sic] Missile (ICBM) the [United States] bases would also become vulnerable. Therefore . . . planning was initiated for the maximum dispersal of the Strategic Air Command forces."[159] The successful Soviet launch of Sputnik in October 1957, in comparison with costly and embarrassing US missile launch failures, galvanized the American national view of the threat the country faced.[160] Warning time of a Soviet bomber attack once measured in

155. Tony Lin, "Development of U.S. Air Force Intercontinental Ballistic Missile Weapon Systems," *Journal of Spacecraft and Rockets* 40, no. 4 (July-August 2003): 494. Shaw. and Warnock, *The Cold War and Beyond*, 35.
156. Lin, "Development of U.S. Air Force Intercontinental Ballistic Missile Weapon Systems," 493.
157. Shaw and Warnock, *The Cold War and Beyond, ,* 35.
158. Raymond L. Garthoff, "Estimating Soviet Military Intentions and Capabilities," in *Watching the Bear: Essays on CIA's Analysis of the Soviet Union,* Haines, Gerald K. and Robert E. Leggett ed., (Washington, DC: Government Printing Office, 2004), 141.
159. History, Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, 355-356.
160. Hopkins and Goldberg, *The Development of Strategic Air Command*, 65.

hours was now mere minutes with missiles.[161] Air Force leaders once again looked for ways to increase survivability. The first liquid-fueled Atlas missiles were positioned above ground. Their only protection, like the bombers, was local dispersal, and a plan to launch before the Soviet's missiles had time to reach their destination. To achieve the necessary responsiveness, the first Atlas missiles were put on 15-minute alert starting 31 October 1959.[162] Improvements in protection were developed for follow-on missiles. The Titan and Minuteman ICMBs were designed to operate from underground and widely dispersed silos.[163] Last, SAC considered using mobility to protect the missiles as well. SAC initiated a program to host 50 to 150 Minuteman ICBMs on railroad cars. Such mobility would all but eliminate the chance the Soviets could know and target these missiles, drastically increasing survivability. Despite the promise of such a weapon, no systems were ever deployed. Silo-based missiles were less expensive, the missiles had better accuracy, and the command and control allowed for a quicker response time than the mobile approach.[164]

Conclusion

SAC sought to decrease its vulnerability to a Soviet surprise attack by developing an enhanced long-range capability that could operate from areas of relative safety. The inability to marshal significant forces from the United States during most of the 1950s forced SAC to retain a significant overseas presence. That began to change, however, with the delivery of the B-52 and KC-135. SAC's true long-range capability was cemented when substantial numbers of ICBMs became operational in the early 1960s.

SAC's stand-off approach was appropriate because the strengths and limitations of this approach aligned the airpower contribution the Command provided US strategy. SAC's contribution relied on retaliating to a Soviet attack by destroying previously identified fixed targets. This strategy required the survival of sufficient forces after the surprise attack to mount a retaliatory response with enough force to destroy the fixed

161. Meilinger, "How LeMay Transformed Strategic Air Command," 85.
162. Lin, "Development of U.S. Air Force Intercontinental Ballistic Missile Weapon Systems," 498.
163. Lin, "Development of U.S. Air Force Intercontinental Ballistic Missile Weapon Systems," 498.
164. Lin, "Development of U.S. Air Force Intercontinental Ballistic Missile Weapon Systems," 498. Interestingly, hosting the new Peacekeeper missile on railway cars was proposed again in the 1980s but again it was never implemented.

targets. Most importantly, the strategy assumed a static and largely defenseless target environment.

By moving its bases farther from the adversary, SAC increased the adversary's time to strike SAC bases while also increasing the time it took SAC bombers to reach their targets. This trade-off was beneficial. Increasing the adversary's time gave SAC more opportunity to launch its bombers or missiles and locally disperse forces, whereas the increased flight time for SAC bombers was not operationally significant. The reason was due to the nature of targets SAC planned to attack, which were fixed sites that were part of the Soviet war-making capability. These targets could not be alerted and moved, unlike bombers or missiles, and active defenses were viewed as inadequate. SAC resolved its desire to attack the Soviet targets quickly by maximizing bombers per wave, not by reducing sortie time or pursuing greater sortie rates.

Increasing the distance, and flight time, also created a more stable deterrence framework. With more time, both sides had less urgency to make an immediate decision to commit forces and, therefore, the chance of reacting to a false alarm decreased.[165] The historical evidence suggests this was an unintended consequence of achieving intercontinental range with aircraft. In fact, as covered in the case study, decision makers worked against establishing stability by developing missiles that could travel global distances in only minutes. Decision makers did consider stability in other force planning decisions, however, such as agreeing to the Anti-Ballistic Missile Treaty and the debate between striking counter-value versus counter-force targets.[166]

This case study also shows that achieving complete sanctuary through the stand-off approach can become unachievable in the long run. SAC pursued a stand-off approach in the face of uncertainty. Once it developed truly long-range global capability, its adversary did as well, eliminating the potential for a fully stand-off posture. By 1960, the continental US was clearly within the threat range of the Soviet Union, which caused SAC to take measures to increase resiliency usually associated with the stand-in approach.

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165. Forrest E. Morgan, *Crisis Stability and Long-Range Strike: A Comparative Analysis of Fighters, Bombers, and Missiles* (Santa Monica, CA: RAND Corporation, 2013), 38.
166. A thorough exploration of these concepts is captured in the writings of Bernard Brodie, Thomas Schelling, Herman Kahn, and Albert Wohlstetter, among others, at the RAND Corporation.

Requiring complete sanctuary for the stand-off approach is an unduly narrow view and potentially fatal planning assumption. In this view, one's capability must always have further reach than the adversary. This case study shows that seeking greater security from increased range (pursuing the stand-off approach) was beneficial even if Soviet forces had the same or greater range than SAC's forces. Whether increasing distance from an adversary is beneficial will depend, in part, on the demands one's strategy places on the value of time.

Similar to all the other case studies, SAC experienced political impacts of using overseas bases. Unlike the other case studies, SAC used these bases for purely operational reasons. It required overseas bases during the years it lacked long-range capability to mount a strong retaliatory strike from the United States, not as part of a strategy to gain political benefit. Therefore, the political impacts SAC experienced were all negative. Since the interests between the US and host nations were not always aligned, host nation support was uncertain that caused disadvantages such as expensive basing agreements and the possibility that access could be denied or foreign governments curtailed operations. Also, events in French Morocco demonstrate the US may get pulled into local disputes, in which it otherwise would not have an interest, in order to maintain access and basing rights. For this reason, SAC drastically reduced reliance on these bases, as shown in Figure 5, as soon as it had long-range capability.

Conclusions

Robert Martinage made a convincing case in *Toward a New Offset Strategy* that the US's current approach to force projection will soon become untenable.[1] He portrayed the current approach as one which the US deploys a large quantity of forces over a relatively long period of time to a few close-in bases prior to commencing hostilities.[2] Ever since 1990, when the US deployed in this fashion for Operation Desert Shield writers have sounded alarms that increased threats will make repeating that approach unwise. If these warnings were ever true before, they are certainly true now. As Martinage highlighted, increasing operational risks in the form of vulnerable bases, aircraft, ships, and space assets from growing A2/AD capabilities compel the US to project force differently.[3] Fortunately, this point has wide agreement among US defense planners, and there is no shortage of recommendations on alternative paths the US should pursue. Many of these recommendations, however, are technologically driven. Stating that increasing adversary long-range precision capability means the US should abandon close-in bases, like SAC during the Cold War, fails to recognize the very valid reasons USAFE chose the opposite approach.

The benefit of pursuing a stand-in or stand-off approach is driven by the strategy that airpower serves. More specifically, two factors that are part of the strategy will influence which approach is desirable. The first factor is whether the strategy relies on the physical presence of airpower in contested areas to gain political benefit. The second factor is the relative dynamic or static nature of the target environment that airpower aims to affect.

The political benefit of presence in the contested area can have different intended audiences. First, placing forces in a contested area can become important politically for sound domestic reasons. The Battle of Britain serves as an example of this point. Dowding was forced to defend the entire island and spread his forces throughout. The

1. Robert Martinage, *Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014), 21.
2. Martinage, *Toward a New Offset Strategy*, 22.
3. Martinage, *Toward a New Offset Strategy*, 23.

geographic location of London and its disproportionate political value, however, forced him to position forces south and east of the city in areas of greater threat. Political pressure existed on national leadership who faced the consequences from their constituencies if they had intentionally left parts of Great Britain undefended, but the leadership was not the only ones affected. In the lower ranks, statements from RAF pilots revealed they were determined to protect their home and country and, therefore, to intercept the Luftwaffe attackers *prior* to them reaching their targets—a decision influenced by much more than operational calculation alone.

Placing forces in a contested area can have a political effect on the potential adversary. The USAFE case study demonstrated that commanders placed it in Europe, in part, to communicate to the Soviet Union that US military strength stood in defense of Western Europe. Additionally, this consideration was at least a small part of the Americans' decision to proceed with Operation Frantic. Headquarters Eastern Command asserted that establishing operations inside the Soviet Union would have "psychological importance," and therefore an impact, on the Germans by demonstrating the Allied unified effort stacked against them.

The last political audience to address is allied decision makers. American political and military leaders aimed to convince its European allies of its commitment and resolve to their defense in the 1950s. They believed basing American forces in European countries was the best way to demonstrate its commitment. In fact, the case study documented that European anxiety over American resolve persisted even with the presence of the US military in their countries. Operation Frantic also falls into this category as Army Air Forces commanders strove to influence the Soviet leaders to facilitate operations on Japan from Siberia.

To weigh the advantages and disadvantages of placing forces in a foreign country a strategist must look to how they plan to achieve the political effect with those forces. Whether the strategist seeks direct or indirect political effect will influence whether placing forces in the foreign country is worth the potential drawbacks. American political leaders chose to base defensive forces in Europe to increase their credibility that they would defend its allies in war. This action is an example of a direct relationship between the employment of forces and the political benefit received. An air force may also place

forces in a particular area for indirect political benefit. This type of action is done to increase influence in the host nation for reasons other than those the military directly performs.

Operation Frantic serves as a case in point. The Americans assisted the Soviets on the Eastern front to gain political accommodations that would support the war in the Pacific. To gain indirect political benefit, the forces placed in the host country must perform a task that the host nation finds valuable. For this reason, the Americans allowed the Soviets to dictate the "Frantic Joe" plan. Seeking indirect political gain results in little concern if the host nation interferes with operations. Concern will increase, however, if the purpose of the operation changes. During Operation Frantic, President Roosevelt recognized an opportunity to assist the Warsaw uprising. As the American leadership changed its interests in using the base they became unaligned with Soviet interests and Soviet interference became a significant problem for the Americans leaders. Last, seeking indirect political effect can lead to leaders becoming more concerned with the views of the local population. During Operations Frantic, senior generals acknowledged that since a primary purpose of the mission was to improve relations with the Soviets, a poor relationship with the local community would hurt their objectives. This concern is not as acute when the host nation has a greater interest in the operation performed, as was the case with USAFE seeking direct political effect.

Political considerations can override clear operational evidence that positioning forces in a contested area is dangerous or even unsustainable. The RAF maintained operational forces at Manston and Hawkinge longer than purely operational considerations would have allowed. Political pressure to maintain these bases because of the "value of this fighting vantage ground" in the words of Winston Churchill, were stronger than the operational considerations.[4] The political motivations that kept USAFE in Europe were even stronger, but also more beneficial to the strategic competition. Only looking at operational considerations, USAFE's force posture was most likely indefensible from the vast number of nuclear weapons the Soviet Union could employ in the event of hostilities, even after it implemented its dispersal program. To a lesser degree, political concerns overwhelming operational considerations was also true for

4. Peter Townsend, *Duel of* Eagles (New York: Simon and Schuster, 1970), 370.

Operation Frantic. Indeed, the pursuit of political benefits overrode prudent operational considerations. General Deane admitted he allowed the Soviet Union to maintain responsibility for defense of the Frantic bases, "to get along."[5] Even if prudent defensive measures had been taken, operating from the newly freed Soviet bases represented a higher threat environment with greater risks than operating from England or Italy—risks the Americans accepted due to the strength of their political goals. Contemporary force planners must consider the importance US security strategies have placed on assuring allies through physical presence.

The second factor that drives the desire to pursue a stand-in or stand-off approach is the relative dynamic or static nature of the target environment. Colin Gray has written, "Time is the least forgiving dimension of strategy."[6] He explains that unlike any other factor, time cannot be recovered once lost. At first, this statement may seem to encourage accomplishing objectives quickly, but this is not the case. The statement also suggests that benefits can come from purposeful delay or increasing time. The benefits, of course, depend on the context in which the strategist finds himself.[7] A dynamic environment demands responses to actions that occur in the environment. A competitor gains an advantage by minimizing the time between observing a change and responding to it. For example, during the Battle of Britain the RAF responded to Luftwaffe actions. The RAF experienced greater time pressure than the Luftwaffe. This pressure compelled the RAF to position close to the operational area to intercept Luftwaffe bombers, even if the threats were greater. The same demands on time made USAFE favor dispersal options that positioned combat elements at forward locations. NATO operational plans called for USAFE to respond to rapidly advancing Soviet columns or defend against Soviet aircraft. Within the dispersal plan, USAFE prioritized keeping combat elements as close to the operational as possible.

An airborne-alert can alleviate the pressure on time that comes from responding to changes in a dynamic environment. Such an approach, however, typically requires large

5. John R. Deane, *The Strange Alliance: The Story of Our Efforts at Wartime Co-operations with Russia* (Bloomington, IN, 1973) 110.
6. Colin Gray, *Fighting Talk: Forty Maxims on War, Peace, and Strategy* (Westport, CT: Praeger Security International, 2007), 70.
7. Gray, *Fighting Talk*, 70-71.

numbers of assets compared to the number of targets a force may need to attack. For example, if the RAF had many more fighters (and pilots) than the Luftwaffe had aircraft in any attack wave, the RAF could have based its forces in relative safety while it flew CAPs in the south. In effect, placing aircraft in a CAP removes the transit time from base to operational area from the realm of the competition. However, the total number of aircraft that can be kept on patrol decreases as the distance of the operational area increases. Potential adversaries, knowing the quantity of assets the US possesses, would respond by increasing its own capability to defend against this possibility, increasing the need to base closer to the operational area.

If the target environment is static, there is not as much need to reduce response times and therefore not as much pressure on placing forces closer. With less incentive to base forward, air forces will not accept as much risk to do so. There are still benefits for these forces to base closer to the operational area. If an air force is not concerned with survivability, it will seek the benefits from operating closer, even if attacking static targets. This condition existed for the Luftwaffe in the Battle of Britain. It maintained the initiative and attacked fixed targets, which did not force them to respond to changes in the target environment. However, they were still compelled to operate from as close as possible to extend the operational depth of their fighters, and maximize loiter time. Since they faced only minimal threat from RAF bombers, they could position as far forward as geography allowed in the Pas-de-Calais.

SAC, on the other hand, also faced a static target environment. It also faced greater threats to its bases than the Luftwaffe faced in WWII. SAC had incentive to operate closer to its targets while it still had limited intercontinental capability. Once it had access to North Africa, from where it could reach all targets, there was little incentive to move any further forward, given the threat. The case study showed that SAC was unwilling to operate from the European continent because it viewed the risk as too great, even though USAFE operated from there. USAFE had time pressures that did not exist for SAC (in addition to the possibly more important political factors). SAC did not need to operate from any closer than the range of their aircraft required. Since operating further away offered greater survivability, developing long-range capabilities, such as the B-53, KC-135, and ICBMs, provided the stand-off approach it desired. Operating from

further away increased sortie time for both sides. While time is applied to both sides equally, its value to both sides is not.[8] Since SAC bombers could take action by getting airborne in response to an incoming threat, but SAC's targets could not take comparable actions, increasing time for all sides gave SAC a competitive advantage.

Implications of this Study

All force planning is accomplished with great uncertainty of adversary actions and the success of the pursued approach. American Commanders of Operation Frantic accepted the risk of placing their prized B-17s in a contested area to reap a political benefit that never materialized. They could not predict the operational and political developments that would make their investment hopeless. The RAF built its air defense system not expecting the enemy to operate from such proximity. When the short distance to the enemy made it operationally wise to abandon the bases furthest south, political considerations prevented it. USAFE initiated its monumental task of dispersal in the 1950s not knowing that in a few years the political leadership would drastically reduce funding for its command. There is still doubt about whether USAFE's efforts would ever have been meaningful, even if fully funded, given the vast nuclear arsenal the Soviet Union eventually built. SAC pursued a long-range stand-off approach, yet for years could not free itself from the burden of overseas bases due to technological limitations.

These examples should provide the force planner with an appreciation that there is no *one* correct path to pursue. The future environment will change, both in response to actions the US takes, and irrespective of them. An air force that has developed the stand-in approach, to the detriment of its long-range capability, may find itself in a situation where geography or political access prevents operating from close to the adversary. Conversely, an air force that has developed a stand-off force may find it cannot comply with a President's desire to place forces in an allied foreign country. Possibly worse, it does comply thus tempting an operational catastrophe. Faced with this uncertainty it is correct to pursue all approaches, to some degree. This study artificially separated the USAFE and SAC cases for the purpose of finding the commanders' considerations for basing, yet they cannot be separated. By pursuing both approaches at the same time, the

8. Gray, *Fighting Talk*, 72.

USAF protected the vulnerabilities of each. USAFE provided the political commitment that SAC could not while SAC provided survivability and striking power that USAFE most likely could not deliver during war. It is with this dual approach in mind that Air Force planners wrote in *A Call to the Future*, "Our ability to effectively operate in contested environments will require a blended solution." [9] Yet, those planners also realized the era of the US hedging against uncertainty by maintaining dominance in all areas simultaneously may be closing.

The closing gap in capability between US and other state's military forces requires force planners to understand the purpose of pursuing different approaches and the second or third-order effects in doing so. Strategists must accept the uncertainty inherent in their environment, hedge against that uncertainty by pursuing multiple paths, yet still be able to place an emphasis in an area they believe will provide an advantage. The planners who wrote *A Call to the Future* did this as well. After explaining a blended solution is required, they proceed to place emphasis on the stand-off approach. Their willingness to prioritize approaches is admirable, yet leaves questions unanswered on how they arrived at their preferred path and whether such a path is appropriate.

In light of uncertainty—the kind of uncertainty that exists over a 30-year time horizon—technologically determined answers to the question of which approach the USAF should emphasize are not valid.[10] There is no reason to believe the statement, "The increase of A2/AD technologies requires the USAF to rely less on vulnerable close-in bases" is any more, or less, valid than, "The increase of A2/AD technologies requires the USAF to increase the survivability of its currently vulnerable close-in bases." In addition, the assertion that maintaining survivable forces within contested areas is cost-prohibitive is equally fraught with the error of viewing future capabilities and operational concepts as extensions of current capabilities and operational concepts. The USAF has pursued a development path that has incrementally increased the capabilities of its aircraft while decreasing its aircraft inventory. These developments have increased the consequence of losing any one asset, and therefore the risk. Pursuing the stand-in approach would likely require deviating from this development trend in some way. For example, it could

9. Department of the Air Force, *A Call to the Future*, 16.
10. The 30-year outlook is from the Department of the Air Force, *A Call to the Future*.

develop many more, low cost, and highly mobile assets. Therefore, determining the stand-in approach is cost prohibitive by assuming the use of F-35s, or some other high-cost asset, is not appropriate. There is also concern that developing enough long-range capability is equally cost-prohibitive. This assertion is made less often in the literature but is equally invalid given the uncertainty that exists when time horizons are measured in decades. Focusing on an adversary's technology is beneficial for other types of questions. For example, determining how to position and use forces today or in the near future is aided by intelligence on adversary capability. Also, determining which attributes the next increment of a capability should possess is assisted by understanding the capabilities of an adversary today.

It is more beneficial to ask whether the stand-in or stand-off approach provides an advantage with respect to airpower's contribution to the overall strategy. Force planners should ask: How do we plan to use airpower to support our strategy? How important will physical presence be for political reasons and by what mechanism is political benefit gained? How will our use of airpower place pressure on time when locked in competition with a peer adversary? The answers to these questions will drive the direction of the force planning competition. If the US achieves the advantage it pursues, the adversary will likely adjust to minimize US gains, at which time the US may decide to change strategies to obviate an adversary's advances. The change of strategy is not narrowly determined by recent technological developments but by always asking how the US should seek advantage, what is airpower's role, then entering the forces planning competition to make it happen.

Bibliography

Air Force Historical Research Agency

Headquarters, Eastern Command, USSTAF, "The AAF on the Russian Front, Summaries and Conclusions," Drafts and notes, Air Force Historical Research Agency 522.057-1.

Headquarters, Eastern Command, USSTAF. "Frantic History: Negotiations and General Planning," Air Force Historical Research Agency 522.04-1.

History. United States Air Forces in Europe, 1 July - 31 December 1954, Volume I, Air Force Historical Research Agency, K570.01.

History. United States Air Forces in Europe, 1 July - 31 December 1954, Volume VI, Air Force Historical Research Agency, K570.01.

History. United States Air Forces in Europe, 1 January - 31 December 1955, Volume I, Air Force Historical Research Agency, K570.01.

History. United States Air Forces in Europe, 1 January - 31 December 1955, Volume II, Air Force Historical Research Agency, K-70.01.

History. United States Air Forces in Europe, 1 July - 31 December 1957, Volume I, Air Force Historical Research Agency, K570.01.

History. United States Air Forces in Europe, 1 July - 31 December 1957, Volume II, Air Force Historical Research Agency, K570.01.

History. United States Air Forces in Europe, 1 July - 31 December 1957, Volume III, Air Force Historical Research Agency, K570.01.

History. United States Air Forces in Europe, 1 July – 31 December 1960, Volume I, Air Force Historical Research Agency K-570.01.

History. Twelfth Air Force, 1 January - 30 June 1956, Volume I, Air Force Historical Research Agency K650.01-19.

History. Twelfth Air Force, 1 July - 31 December 1956, Volume I, Air Force Historical Research Agency K650.01-19.

History. Twelfth Air Force, 1 January - 31 December 1957, Volume I, Air Force Historical Research Agency K650.01-19.

History. Strategic Air Command, 1 July 1954 – 30 June 1956, Volume II, Air Force Historical Research Agency, K416.01.

History. 308 Bombardment Wing, August 1954. Air Force Historical Research Agency, K-WG-308-HI.

Mediterranean Allied Air Forces. *MAAF Frantic History*. Air Force Historical Agency, 622.430-6.

Operation Frantic, miscellaneous papers, cables, and memorandums, Air Force Historical Research Agency, 522.161-5.

United States Air Forces in Europe. "(UNCL) Reduction of USAFE Tactical and Logistic Vulnerability (Short Title: USAFE Dispersal Program)," 15 January 1955, Air Force Historical Research Agency, IRIS: 510703.

USSTAF. Operational Planning Study, 12 Nov 1944, Air Force Historical Research Agency 522.161-5.

Articles

Deaile, Melvin G. "The SAC Mentality: The Origins of Strategic Air Command's Organizational Culture, 1948-1951." *Air and Space Power Journal*, (March-April 2015): 48-73.

Flounouy, Michele and Janine Davidson. "Obama's New Global Posture," *Foreign Affairs*, July/August 2012.

Infield, Glenn. "Out of School and Into Action: Our First Gudied Missileaires." *Popular Mechanics*, July 1958, 122.

Kohn, Richard and Joseph P. Haraham. "U.S. Strategic Air Power, 1948-1962: Excerpts from an Interview with Generals Curtis E LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton." *International Security* 12, no. 4 (Spring 1988): 78-95.

Lin, Tony. "Development of U.S. Air Force Intercontinental Ballistic Missile Weapon Systems." *Journal of Spacecraft and Rockets* 40, no. 4 (July-August 2003): 491-509.

Meilinger, Phillip S. Col. "How LeMay Transformed Strategic Air Command." *Air and Space Power Journal*, (March-April 2014): 77-86.

Rivlin, Benjamin. "The United States and Moroccan International Status, 1943-1956: A Contributory Factor in Morocco's Reassertion of Independence from France." *The International Journal of African Historical Studies* 15, no. 1 (1982): 64-82.

White, Josh. "U.S. to Remove Military Forces and Aircraft from Iceland Base." *The Washington Post*, 17 March 2006. http://www.washingtonpost.com/wp-dyn/content/article/2006/03/16/AR2006031601846.html (accessed 23 March 2015).

Wright, Claudia. "Journey to Marrakesh: US—Moroccan Security Relations." *International Security* 7, no. 4 (Spring 1983): 163-179.

X (George Kennan). "The Sources of Soviet Conduct." *Foreign Affairs* 25, no. 4 (July 1947): 566-582.

Books

Anderton, David A. *Strategic Air Command: Two-Thirds of the Triad*. New York: Charles Scriberner's Sons, 1976.

Baumbach, Werner. *The Life and Death of the Luftwaffe: Germany's "Lost Victories" of the Air by the Commander of Bomber Forces*. New York: Ballantine Books, 1949.

Berkhoff, Karel C. *Harvest of Despair: Life and Death in Ukraine Under Nazi Rule*. Cambridge, MA: Harvard University Press, 2008.

Blaker, James R. *United States Overseas Basing: An Anatomy of the Dilemma*. New York: Praeger, 1990.

Bluth, Christoph. *Britain, Germany, and Western Nuclear Strategy*. Oxford, UK: Clarendon Press, 1995.

Borgiaz, William S. *The Strategic Air Command: Evolution and Consolidation of Nuclear Forces, 1945-1955*. London, UK: Praeger, 1996.

Bowman, Martin W. *Castles in the Air: The Story of the B-17 Flying Fortress Crews of the US 8th Air Force*. Wellingborough, UK: Patrick Stephens Limited, 1984.

Bungay, Stephen *The Most Dangerous Enemy: An Illustrated History of the Battle of Britain*. Minneapolis, MN: Zenith Press, 2000.

Clausewitz, Carl von. *On War*. Edited and translated by Michael However and Peter Paret. Princeton, NJ: Princeton University Press, 1976.

Collier, Basil. *The Defence of the United Kingdom*, London, UK: Her Majesty's Stationary Office, 1957.

Conversino, Mark J. *Fighting with the Soviets: The Failure of Operation Frantic 1944-1945.* Lawrence, KS: University Press of Kansas, 1997.

Cooling, B. Franklin ed. *Case Studies in the Achievement of Air Superiority*. Washington DC: Center for Air Force History, 1994.

Davis, Jacquelyn. *Forward Presence and U.S. Security Policy: Implications for Force Posture Service Roles and Joint Planning*. Washington, DC: Institute for Foreign Policy Analysis, 1995.

Davies, Norman. *Rising '44: The Battle for Warsaw*. New York: Viking, 2004.

Deane, John R. *The Strange Alliance: The Story of Our Efforts at Wartime Co-operations with Russia*. Bloomington, IN: Indiana University Press, 1973.

Dolman, Everett. *Astropolitik: Classical Geopolitics in the Space Age*. New York: Frank Cass Publishers, 2006.

Dolman, Everett. *Pure Strategy: Power and principle in the Space and Information*. London, UK: Routledge, 2004.

Freedman, Lawrence. *U.S. Intelligence and the Soviet Strategic Threat*. Princeton, NJ: Princeton University Press, 2014.

Friedman, Norman. *The Fifty Year War: Conflict and Strategy in the Cold War*. Annapolis, MD: Naval Institute Press, 2000.

Garthoff, Raymond L. "Estimating Soviet Military Intentions and Capabilities." In *Watching the Bear: Essays on CIA's Analysis of the Soviet Union*, edited by Gerald K. Haines and Robert E. Leggett, 135-186. Washington, DC: Government Printing Office, 2004.

Gati, Charles. *Failed Illusions: Moscow, Washington, Budapest, and the 1956 Hungarian Revolt*. Standford, CA: Standford University Press, 2006.

Gilbert, Martin. *The Second World War: A Complete History*. New York: Holt Paperbacks, 2004.

Glantz, David M. and Jonathan House, *When Titans Clashed: How the Red Army Stopped Hitler*. Lawrence, KS: University Press of Kansas, 1995.

Gray, Colin. *Fighting Talk: Forty Maxims on War, Peace, and Strategy*. Westport, CT: Praeger Security International, 2007.

Harkavy, Robert E. "Thinking about Basing." In *Reposturing the Force: US Overseas Presence in the Twenty-first Century,* edited by Carnes Lord, 9-31. Newport, RI: Naval War College, February 2006.

Harriman, Averell W. and Elie Abel. *Special Envoy to Churchill and Stalin, 1941-1946*. New York: Random House, 1975.

Hartmann, Christian. *Operation Barbarossa Nazi Germany's War in the East, 1941-1954*. Oxford, UK: Oxford University Press, 2013.

Heuser, Beatrice. *NATO, Britain, France and the FRG: Nuclear Strategies and Forces for Europe, 1949-2000*. New York: St Matin's Press, 1997.

Hipple, Frank von. *Russian Strategic Nuclear Forces*. Cambridge, MA: MIT Press, 2004.

Hopkins, J.C. and Sheldon A. Goldberg. *The Development of Strategic Air Command 1946-1986*. Offutt Air Force Base, NE: Office of the Historian, Headquarters Strategic Air Command, 1986.

Hollow, David. *Stalin & The Bomb*. New Haven, CT: Yale University Press, 1994.

Hough, Richard and Richard Alexander. *The Battle of Britain: The Greatest Air Battle of World War II*. New York: Norton & Company, 2005.

Johnson, David Alan. *The Battle of Britain and the American Factor July-October 1940*. Conshohocken, PA: Combined Publishing, 1998.

Kaplan, Fred. *Wizards of Armageddon*. New York: Simon and Schuster, 1983.

LeMay, Curtis E. *Mission with LeMay: My Story*. Garden City, NY: Doubleday & Company Inc., 1965.

Lloyd, Alwyn T. *A Cold War Legacy: A Tribute to Strategic Air Command 1946-1992*. Missoula, MT: Pictorial Histories Publishing Company Inc., 2000.

Lyons Michael J., *World War II: A Short History*. Upper Saddle River, NJ: Prentice Hall, 2004.

Mark, Eduard. *Defending the West: The United States Air Force and European Security 1946-1998*. Air Force History and Museums Program, [no date].

McDonough, James Lee. *The Wars of Myron King: A B-17 Pilot Faces WWII and U.S.-Soviet Intrigue*. Knoxville, TN: University of Tennessee Press, 2009.

Mets, David R. *Master of Airpower: General Carl A. Spaatz*. Novato, CA: Presidio Press, 1988.

Morgan, Forrest E. *Crisis Stability and Long-Range Strike: A Comparative Analysis of Fighters, Bombers, and Missiles*. Santa Monica, CA: RAND Corporation, 2013.

Muller, Richard R. *German Air War in Russia*. Mount Pleasant, SC: Nautical & Aviation Publishing Co. of America, 1992.

Nalty, Bernard C. *Winged Shield, Winged Sword: A History of the United States Air Force*. Washington, DC: Air Force History and Museums Program, 1997.

Park, William. *Defending the West: A History of NATO*. Boulder, CO: Westview Press, 1986.

Polmar, Norman and Timothy Laur. *Strategic Air Command*. Baltimore, MD: The Nautical & Aviation Publishing Company of America, 1990.

Posen, Barry R. *The Sources of Military Doctrine*. Ithaca, NY: Cornell University Press, 1984.

Ray, John. *The Battle of Britain New Perspectives: Behind the Scenes of the Great Air War*. London, UK: Brockhampton Press, 1994.

Schelling, Thomas C. *Arms and Influence*. New Haven, CT: Yale University Press, 1966.

Shaw, Robert. *Fighter Combat: Tactics and Maneuvering*. Annapolis, MD: Naval Institute Press, 1985.

Shaw, Frederick J. Jr., and Timothy Warnock. *The Cold War and Beyond: Chronology of the United States Air Force 1947-1997*. Maxwell AFB, AL: Air University Press, 1997.

Steijer, Cees. *History of USAFE*. Ramsbury, UK: Airlife Publishing Ltd, 1991.

Stoler, Mark A. *Allies and Adversaries: The Joint Chiefs of Staff, the Grand Alliance, and US Strategy in World War II*. Chapel Hill, NC: University of North Carolina Press, 2003.

Tooze, Adam. *The Wages of Destruction: The Making and Breaking of the Nazi Economy*. London, UK: Penguin, 2008.

Townsend, Peter. *Duel of Eagles*. New York: Simon and Schuster, 1970.

Wilson, Eunice. *Dangerous Sky: A Resource Guide to the Battle of Britain.* Greenwood Press 1995

Wood, Derek. *The Narrow Margin: The Battle of Britain and the Rise of Air Power 1930-40*. Westport, CT: Greenwood Press, 1961.

Worden, Mike. *Rise of the Fighter Generals*. Maxwell Air Force Base, AL: Air University Press, 1998.

Work, Robert O. "On Sea Basing," Lord, Carnes ed.*Reposturing the Force: U.S. Overseas Presence in the Twenty-First Century*. Newport, RI: Naval War College Newport Papers, 2006.

Wright, Robert. *Dowding and the Battle of Britain*. London: Macdonald & Co., 1969.

Zarate, Robert and Henry Sokolsi, ed. *Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter*. Carlisle, PA: United States Army War College Press, 2009.

Government Documents

Air-Sea Battle Office. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges." Washington, DC: Department of Defense, May 2013.

Dempsey, Martin E. General US Army. *Capstone Concept for Joint Operations: Joint Force 2020*. Washington DC: Joint Chiefs of Staff, 10 September 2012.

Dempsey, Martin E. General US Army. *Joint Concept for Entry Operations*. Washington DC: Joint Chiefs of Staff, 7 April 2014.

Historical Division Joint Secretariat. *US Unified Command In Europe*. Washington, DC: Joint Chiefs of Staff.

Joint Publication (JP) 1-02. *Department of Defense Dictionary of Military and Associated Terms*, 8 November 2010 (As Amended Through 16 July 2014).

Minutes. Roosevelt-Stalin Meeting, November 29, 1943 in *Department of State Diplomatic Papers Bohlen minutes.*

Obama, Barak H. *National Security Strategy*. Washington, DC: The White House, May 2010.

Snyder, Thomas S. and Shelia A. Shaw. *United States Air Forces in Europe Historical Highlights 1942-1992*. Ramstein Air Base, Germany: Headquarters United States Air Forces in Europe, 1993.

US Department of Defense. *Joint Operational Access Concept: Version 1.0*. Washington, DC: Joint Chiefs of Staff, 17 January 2012.

US Department of Defense. *Quadrennial Defense Review 2014.* Washington, DC: Office of the Secretary of Defense, 2014.

US Department of Defense. *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*. Washington, DC: Office of the Secretary of Defense, January 2012.

US Department of the Air Force. *America's Air Force: A Call to the Future*. Washington, DC: Office of the Secretary of the Air Force, July 2014.

Reports

Barno, David W. Lieutenant General, Nora Bensahel, Matthew Irvine, and Travis Sharp. *Sustainable Pre-eminence: Reforming the U.S. Military at a Time of Strategic Change*. Washington, DC: Center for a New American Security, 2012.

Bowie, Christopher. *The Anti-Access Threat and Theater Air Bases*. Washington, DC: Center for Strategic and Budgetary Assessment, 2002.

Boyd, John R. "Organic Design for Command and Control." Unpublished Presentation, 1987.

Central Intelligence Agency. "Soviet Capabilities and Intentions." NIE-3, Washington, DC, 15 November 1950.

Fraser, Robert D. "Iceland, Its Geopolitics and Issues—1950–1962." War College thesis, Air University, Maxwell Air Force Base, 1962.

Kennedy-Minott, Rodney. *U.S. Regional Force Application: The Maritime Strategy and Its Effect on Nordic Stability*. Stanford, CA: Hoover Institute Press, 1988.

Martinage, Robert. *Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability*. Washington, DC: Center for Strategic and Budgetary Assessments, 2014.

Pinter, William E. "Concentrating on Dispersed Operations: Answering the Emerging Anti-Access Challenge in the Pacific Rim." Master's Thesis, School of Advanced Air and Space Studies, June 2003.

Shaud, John A. *Air Force Strategy Study 2020-2030*. Maxwell AFB, AL: Air Force Research Institute, 2011.

Shlapak, David A., John Stillion, Olga Oliker, Tanya Charlick-Paley. *A Global Access Strategy for the U.S. Air Force*. Santa Monica, CA: RAND Project Air Force, 2002.

United Nations General Assembly. "Report on the Special Committee on the Problem of Hungary." Official Records: Eleventh Session, Supplement No. 18 (A/3592) New York, 1957.

Van Tol, Jan, Mark Gunzinger, Andrew Krepinevich, and Jim Thomas. *AirSea Battle: A Point-of-Departure Operational Concept*. Washington, DC: Center for Strategic and Budgetary Assessments, 2010.

Weapon Systems Evaluation Group. "Evaluation of the Effectiveness of Strategic Air Operations." Study 1 in *Evaluating the Air Offensive: The WSEG 1 Study*. New York: Garland Publishing, 1990.

Wohlstetter, A.J., F.S. Hoffman, R.J. Lutz, and H.S. Rowen. *Selection and Use of Strategic Air Bases*. RAND Report R-266. Washington, DC: United States Air Force Project RAND, April 1954.

Websites

Alex, Dan. "Boeing B-47 Stratojet: Medium/Heavy Bomber (1951)." Military Factory. http://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=236 (accessed April 2015).

Bureau of Labor Statistics. "CPI Inflation Calculator." http://data.bls.gov/cgi-bin/cpicalc.pl (accessed April 2015).

History.com. "Americans bomb Germans for first time." http://www.history.com/this-day-in-history/americans-bomb-germans-for-first-time (accessed February 2015).

National Museum of the Air Force. "Boeing B-29 Superfortress." http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=527.

Strategic-Air-Command.com. "SAC's Bomber Fleet." http://strategic-air-command.com/aircraft/bomber-graph/SAC%20Bomber%20Graph.htm (accessed April 2015).

U.S. Air Force. "History Milestones." The Official web site of the U.S. Air force. http://archive.is/dIMz (accessed 24 March 2015).